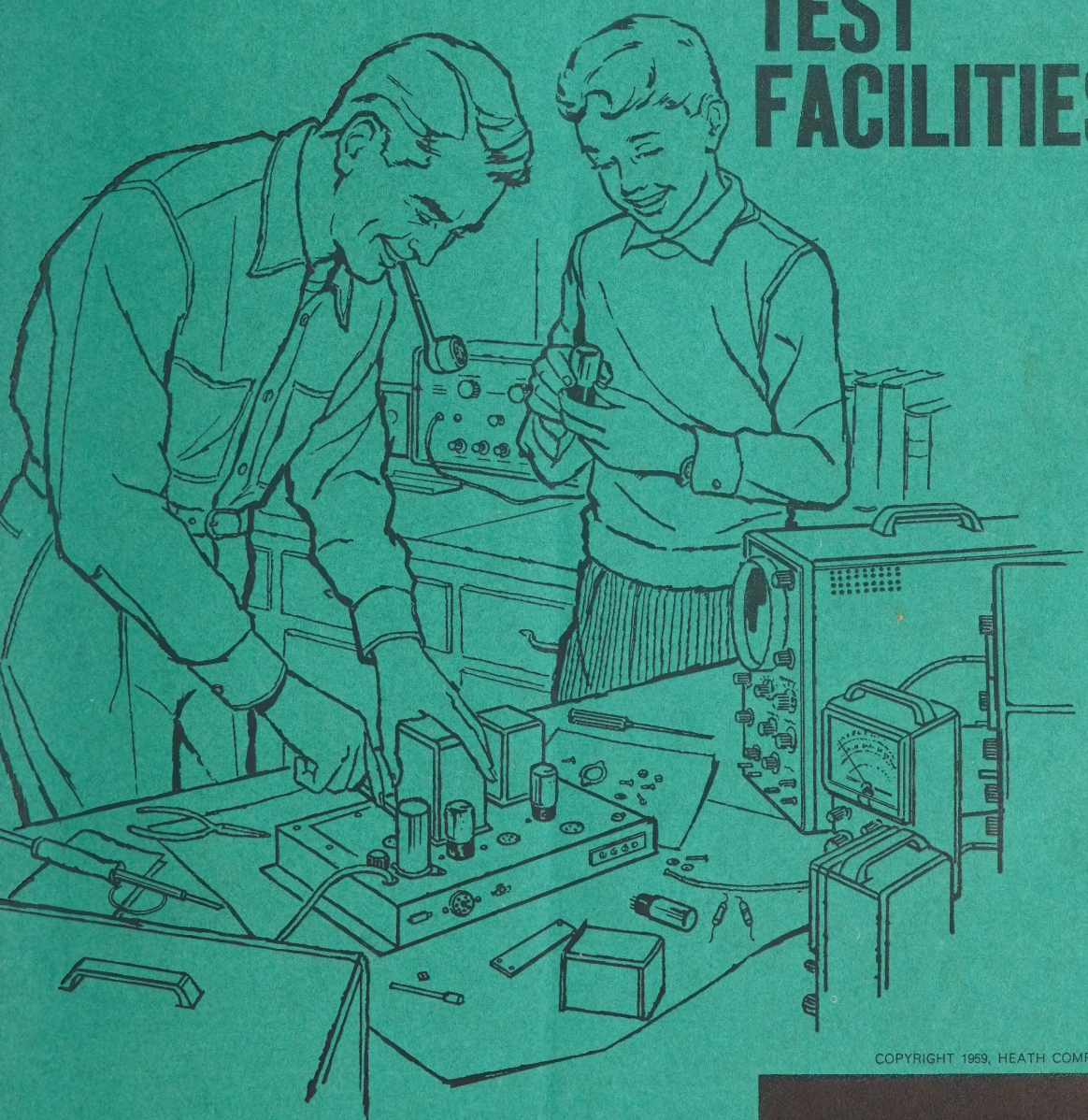


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EQUIP YOUR LAB WITH DEPENDABLE HEATHKIT® TEST FACILITIES



COPYRIGHT 1959, HEATH COMPANY

the quality name in kit form electronics

HEATH COMPANY, BENTON HARBOR, MICHIGAN

a subsidiary of Daystrom, Inc.

HEATHKIT®

HEATHKIT®...the quality name in do-it-yourself electronics...

IN INDUSTRY

Leaders in many electronic fields are learning of the advantages and savings offered by low cost kit-form test instruments. Employees swiftly and easily assemble the kits during slack periods . . . and Heathkit tops the list in overall quality and dependability.



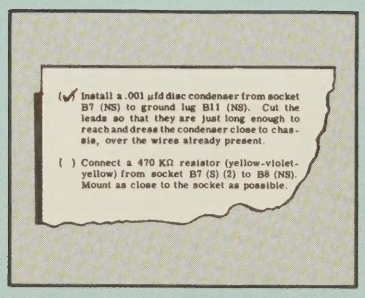
IN SCHOOLS

Students and instructors alike benefit from the instruction gained in Heathkit assembly. The step-by-step instruction manual, complete with pictorial diagrams, is a valuable textbook in itself. Heathkit building is a fascinating classroom project and the completed instrument becomes a useful school shop accessory.

IN THE HOME

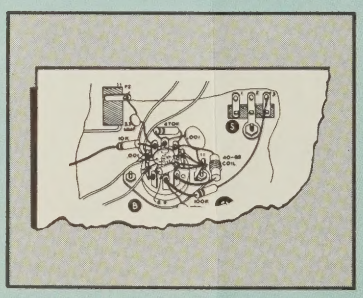
By saving you one-half or more over the cost of comparable ready made equipment, Heathkit lets you equip a home lab at a cost well within the average budget. Whether you are a full time serviceman, home experimenter, or hobbyist, you will get more value-per-dollar with Heathkits.

electronic kits that offer you more for every dollar invested...



STEP-BY-STEP ASSEMBLY INSTRUCTIONS . . .

Read the step . . . perform the operation . . . and check it off —it's just that simple. These plainly-worded, easy-to-follow steps cover every assembly operation.



EASY-TO-FOLLOW PICTORIAL DIAGRAMS

Detailed pictorial diagrams in your Heathkit construction manual show where each and every wire and part is to be placed.



TOP QUALITY NAME-BRAND COMPONENTS USED IN ALL KITS . . .

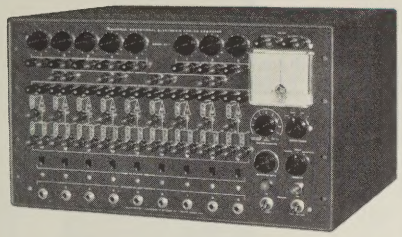
Electronic components used in Heathkits come from well-known manufacturers with established reputations. Your assurance of long life and trouble-free service.

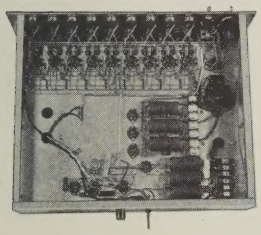
HEATHKIT®

NEW! EDUCATIONAL COMPUTER

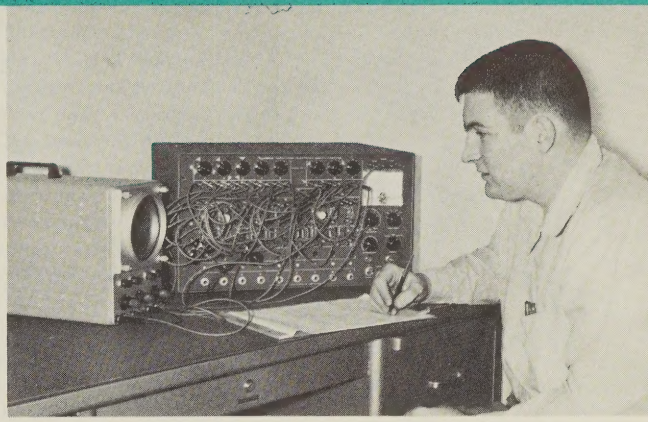
HEATHKIT EC-1

$199.95





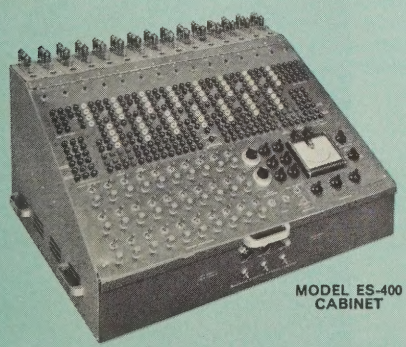
Clean chassis layout and thorough step-by-step instructions allow even the beginner to swiftly and successfully complete the kit.



Problem results may be read directly from meter supplied with kit, or with external read-out device such as the Heathkit OR-1 DC Oscilloscope shown above.

EDUCATIONAL ELECTRONIC ANALOG COMPUTER KIT

The first and only instrument of its quality and price-class on the market today, the new Heathkit Educational Electronic Analog Computer puts advanced engineering techniques within easy reach of the average individual or institution. The EC-1 fills a multitude of needs in the fields of education and electronics. Ideal in schools and colleges for teaching and demonstration in engineering, physics and mathematics classes; for laboratory use, especially in teaching analog computer design and application; for industrial laboratories where preliminary running of problems saves costly time. It is completely self-contained, including nine DC operational amplifiers, three initial condition power supplies, five coefficient potentiometers, four sets of relay contacts, an electronically regulated power supply and a repetitive oscillator for automatic operation. Also included with the kit is an assortment of precision resistors, Mylar capacitors, special silicon diodes and patch cords for setting up scores of complex problems. All components are mounted on plugs for convenient and rapid insertion in problem-board sockets. All markings and symbols are standard computer type. Replacement or additional parts are readily available in most areas. Problem results are read directly from the meter supplied with the kit, and provision is also made for measuring results with an external read-out device such as the Heathkit OR-1 DC Oscilloscope. The kit is ideally suited to assembly by students. The chassis lay-out is clean and wide open allowing even the beginner to construct the kit in a short time following the step-by-step instructions and clearly illustrated diagrams. An informative manual is provided, illustrating operating procedures and basic computer information as well as showing how to set up and solve typical problems. The EC-1 is housed in a handsome steel case with convenient access hatch. A specially designed, heavy duty chassis and ruggedly braced panel permit firm mounting on standard relay rack. The economical cost of this kit-form computer, coupled with its superb quality and versatility, make it one of the most remarkable buys ever offered by Heath Company. Shpg. Wt. 43 lbs.



MODEL ES-400 CABINET

FULL COMPUTER GROUP C **$945.00** Complete

Write for further information

ELECTRONIC ANALOG COMPUTER KIT

Of special interest to those of you with industrial or university engineering and research activities, the Heathkit Electronic Analog Computer provides an advanced "slide rule" for simulating equations or physical problems electronically. Due to the tremendous savings through kit construction, the Heathkit Computer fills the bill in situations where a computer was ruled out in the past due to cost. Yet the instrument is so easy to build, following concise step-by-step instructions and pictorial diagrams, that even the beginner can successfully complete it. The ES-400 Computer cabinet houses power supplies, amplifiers, and computing components. Other component groups are available to expand flexibility for countless problem applications.

FREE FOLDER: Complete details concerning the Heathkit Electronic Analog Computer kit are available free upon request. This folder explains exactly what each computer group consists of, and explains the function of each element in the group. Send for your free copy now and get the complete computer story.

VERSATILE HEATHKIT® SCOPES..

5" DC OSCILLOSCOPE KIT

The brand-new model OR-1 is the latest development in the fine line of Heathkit oscilloscopes and is designed to fill the high demand for a low-cost high quality DC oscilloscope. It is a handsomely designed unit of compact size with anodized front panel, two-color lettering and matching knobs. Controls are well positioned for operating convenience. Features include identical DC coupled vertical and horizontal amplifiers, with low relative phase shift characteristics, 5ADP2 flat-face CRT and edge-lighted graticule. The transformer operated power supply employs silicon diodes in full wave voltage doubler circuits for B+ and bias supplies. Critical voltages are regulated with gas-filled VR tubes. Both vertical and horizontal channels feature DC to 200 kc bandwidth (1 db point) and a sensitivity of .1 volt peak-to-peak per CM (uncalibrated). The attenuator is a 3-position compensated type. Coupling may be either AC or DC as selected by the input attenuator switch. A multi-vibrator type recurrent sweep generator provides a linear, saw-tooth waveform. Normal frequency coverage is from 5 CPS to 50 kc in four overlapping ranges. Lower sweep rates may be obtained by adding capacity to the external capacity binding posts on the front panel. Provision is also made for either internal or external sync, switch-selected. The sync level is automatically maintained over a range of 1 to 8 CM vertical trace height. An ideal scope for use as a read-out indicator in computer applications or in industrial testing, audio development work, general utility applications, etc., as well as in educational and medical fields. Input impedance is 3.6 megohms shunted by 28 mmf. Thoughtful engineering and circuit layout makes this kit easy to assemble and a pleasure to use in hundreds of possible applications. Shpg. Wt. 21 lbs.

"PROFESSIONAL" 5" DC OSCILLOSCOPE KIT

The professional quality and features of this DC oscilloscope make it one of the finest instruments ever designed for kit-form construction. Offering complete versatility, the OP-1 features DC coupled amplifiers and also DC coupled CR tube unblanking. The triggered sweep circuit will operate on either internal or external signals and may be either AC or DC coupled. Sweep frequencies are provided by switch-selected base rates of 2 and .2 milliseconds-per-CM, and 20, 2 and 1 microseconds-per-CM, in conjunction with the continuously variable 10-to-1 multiplier. Sweep frequencies are calibrated to within 10% at all control settings, and the sweep frequency may be reduced by adding capacity to the "external" binding post on the front panel. Vertical frequency response is within 1 db from DC to 2.2 megacycles-per-second, and within 6 db from DC to 4.5 megacycles-per-second. Rise time is less than .1 microsecond. The 12-position vertical attenuator is calibrated in volts-per-CM and the horizontal sweep is calibrated in time-per-CM. Vertical coupling may be either AC or DC switch-selected. Horizontal channel frequency response is within 1 db from DC to 450 kc and within 6 db from DC to 900 kc. Uses a 5ADP2 flat face CR tube for accurate readings on an edge-lighted grid screen. The power supply is transformer operated utilizing silicon diode rectifiers and is fused for protection. All critical voltages are regulated with gas-filled voltage regulator tubes. A 150 volt DC test voltage is available on the front panel for vertical channel calibration. Construction of the scope is greatly simplified through the use of five prewired terminal boards and precut, cabled wiring harness. The complete versatility and many features designed into this instrument promise outstanding results in every application. Shpg. Wt. 34 lbs.

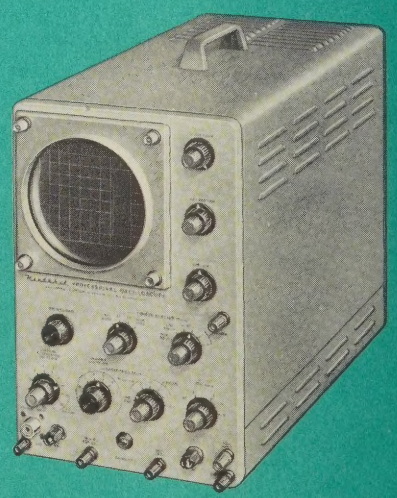
an ideal low-cost DC oscilloscope



HEATHKIT OR-1 $119.95



outstanding in design, quality and performance



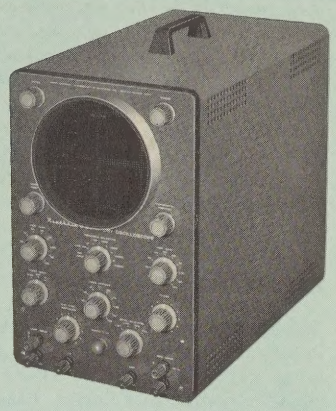
HEATHKIT OP-1 $179.95

FOR LAB OR SHOP USE

HEATHKIT®

"EXTRA DUTY" 5" OSCILLOSCOPE KIT

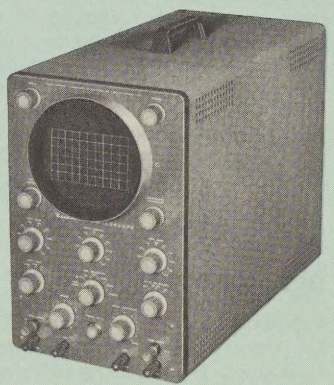
A top performer in every respect, the model O-12 handles critical observations in your laboratory or shop with ease, providing clear, sharp, pattern displays in every application. Vertical frequency response extends from 3 CPS to 5 mc +1.5 db —5 db without extra switching. Response is down only 2.2 db and 3.58 mc. The Heath patented sweep circuit functions effectively from 10 CPS to better than 500 kc in five steps, giving you five times the usual sweep obtained in other scopes. An automatic sync circuit with self-limiting cathode follower provides excellent linearity and lock-in characteristics. Extremely short retrace time and efficient blanking action. Both vertical and horizontal output amplifiers are push-pull and the scope incorporates a 1 V peak-to-peak calibrating source—step attenuated and frequency compensated vertical input—plastic molded capacitors and top-quality parts throughout. The 11-tube circuit features a 5UP1 cathode ray tube. Construction is simplified through the use of two etched metal circuit boards and precut, cabled wiring harness. Shpg. Wt. 22 lbs.



HEATHKIT O-12 $65.95

"GENERAL PURPOSE" 5" OSCILLOSCOPE KIT

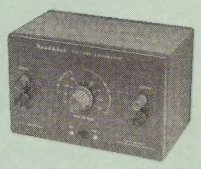
The favorite of service technicians all over the country this fine scope incorporates many "extras" not expected at this low price. Features wide vertical amplifier frequency response, extended sweep generator operation, and improved stability. Frequency response of the vertical amplifier is within 3 db from 4 CPS to 1.2 mc. Vertical sensitivity is .09 volts RMS-per-inch at 1 kc. Sweep generator functions reliably from 20 CPS to over 150 kc. A modern etched circuit board is featured for high stability and reduces assembly time considerably. Both vertical and horizontal amplifiers are push-pull types. Uses a 5BP1 CRT. Provision for external or internal sweep or sync, built-in 1 V peak-to-peak reference voltage and calibrated grid screen. Input to the vertical amplifier is through a step-attenuated, frequency compensated circuit. Ideal for use in servicing and routine laboratory work. Shpg. Wt. 22 lbs.



HEATHKIT OM-3 $39.95

VOLTAGE CALIBRATOR KIT

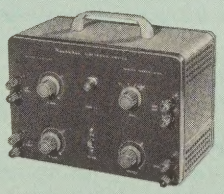
An excellent companion for your oscilloscope, with many applications in television troubleshooting to locate operational faults quickly. Unknown signal level may be measured by comparing with the near-perfect square wave signals of known amplitude produced by the VC-3. Precision 1% attenuator resistors assure accurate output amplitude. Output frequency is approximately 1,000 CPS. Fixed outputs selected by panel switch are 0.03, 0.1, 0.3, 1, 3, 10, 30 and 100 volts peak-to-peak. Shpg. Wt. 4 lbs.



HEATHKIT VC-3 $12.50

ELECTRONIC SWITCH KIT

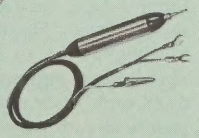
Use with your scope to observe two separate signals simultaneously. Comparing waveforms will help you to localize faults quickly. Separate gain controls are provided for each channel, with sync output to lock oscilloscope sweep or time base to signal frequency. A position control is provided to separate or superimpose the two waveforms. Frequency response is ± 1 db from 0 to 100 kc. Four switching rates of approximately 150, 500, 1500 and 5000 cycles. Shpg. Wt. 8 lbs.



HEATHKIT S-3 $21.95

SCOPE DEMODULATOR PROBE KIT

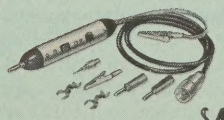
Extends the usefulness of your oscilloscope by observing modulation envelope of RF or IF carriers in TV and radio receivers. Functions like AM detector to pass only modulation of signal and not signal itself. Voltage limits are 30 V. RMS and 500 V. DC. Shpg. Wt. 1 lb.



HEATHKIT 337-C $3.50

UNIVERSAL SCOPE PROBE KIT

This low capacity probe prevents loss of gain, circuit loading or distortion by providing correct instrument impedance matching in oscilloscope investigation of electronic circuits. A switch on the probe allows direct or (times ten) attenuated operation. Ideal for use with scope having calibrated vertical input. Universal connectors supplied adapt to most scopes. Shpg. Wt. 1 lb.



HEATHKIT PK-1 $4.95

HOME LABS—AN INVALUABLE AID

A home lab equipped with the tools of your trade can further your knowledge of electronics by enabling you to try out new ideas and experiments at home. Heathkit test instruments offer the same high quality and performance found in instruments costing many times more. You save high labor costs by doing the easy assembly yourself and at the same time assure yourself of top quality workmanship throughout each instrument. Far-sighted engineers prefer this method of assembling their own equipment. They gain valuable knowledge of the capabilities of the instrument, and have the handy instruction manual available for future reference.

IMPEDANCE BRIDGE KIT

The economical low price of this versatile test instrument puts it in easy reach of the service shop operator, radio ham and even the home experimenter. The IB-2A employs a Wheatstone bridge, capacity comparison bridge, Maxwell bridge and a Hay bridge in one compact package. It is designed for rapid and accurate measurement of resistance, capacitance, inductance, dissipation factors of condensers, and storage factors of inductance. Measures resistance from 0-.1 ohm to 10 megohms, capacitance from 100 mmf to 100 mfd, inductance from 0-.1 millihenry to 100 henries, dissipation factor (D) from 0.002 to 1, and storage factor (Q) from 0.1 to 1000. A 100-0-100 ua meter provides for null indications. Provision is made for using external detector when desired. ½% decade resistors are employed for high accuracy. Features a built-in power supply, 1,000 cycle phase shift generator, and a vacuum tube detector. Shpg. Wt. 12 lbs.

DECADE CONDENSER KIT

Especially valuable in all types of design and development work the DC-1 provides capacity values from 100 mmf to 0.11 mfd in 100 mmf steps. Employs 1% silver-mica capacitors and high quality ceramic wafer rotary switches for minimum loss and features smooth action with positive detent. Shpg. Wt. 3 lbs.

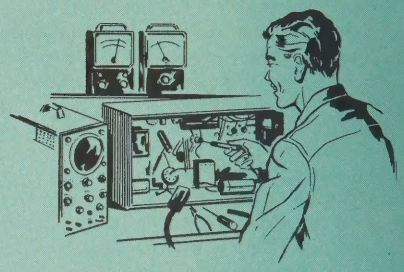
DECADE RESISTANCE KIT

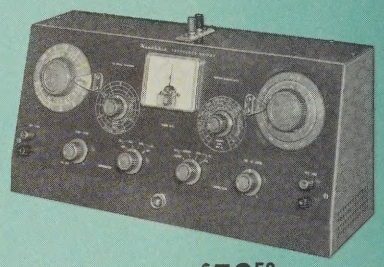
This decade resistance kit incorporates 20 ½% precision resistors arranged so that 5 rotary switches will select any value from 1 ohm to 99,999 ohms in 1-ohm steps. Switches are labeled "units", "tens", "hundreds", "thousands" and "ten thousands". An unusually low price for a real precision device. Shpg. Wt. 4 lbs.

Q METER KIT

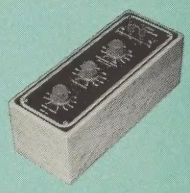
Take the guesswork out of electronic testing with this time and labor saving instrument. Once financially out of reach of small service shops, Heathkit "do-it-yourself" prices make it possible for any technician to own a high quality Q meter. The QM-1 tests components at frequencies at which they are normally used (150 kc to 18 mc). Wide range of inductance, capacitance and Q will cover practically all values encountered. All indications are read directly on a large 4½", 50 microampere, panel-mounted meter. A 12AT7 oscillator with pre-wound coils is used to obtain the full frequency range on four bands. Oscillator output is metered to provide constant injection. A complete VTVM circuit is used as a resonance indicator, using a 6AL5 twin diode and a 12AU7 VTVM amplifier. Voltage regulated and transformer operated power supply utilizes a 6X5 full wave rectifier and OD3 regulator tube. A special test coil is provided for calibration. Shpg. Wt. 14 lbs.

enjoy lab-type facilities





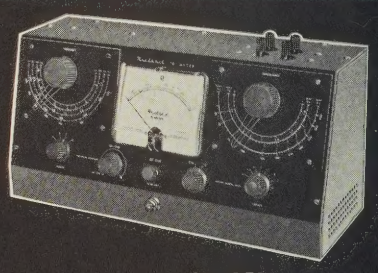
HEATHKIT IB-2A $59.50



HEATHKIT DC-1
$16.50



HEATHKIT DR-1
$19.50



HEATHKIT QM-1 $44.50

HEATHKIT®

IN ELECTRONIC TEST EQUIPMENT



HEATHKIT RS-1
$5.50

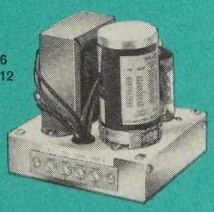


HEATHKIT CS-1
$5.50



HEATHKIT IT-1
$16.50

6 VOLT MODEL VP-1-6
12 VOLT MODEL VP-1-12
$7.95 EACH





HEATHKIT PS-3
$35.50

save time experimenting with new circuits



HEATHKIT PS-4 $54.95

RESISTANCE SUBSTITUTION BOX KIT

The RS-1 contains 36 10% 1-watt resistors ranging from 15 ohms to 10 megohms in standard RETMA values. All values are switch-selected for use in determining desirable resistance values in experimental circuits. Many applications in radio and TV service work. Shpg. Wt. 2 lbs.

CONDENSER SUBSTITUTION BOX KIT

This kit contains 18 capacitors in RETMA standard values from 0.0001 mfd to .2 mfd. All capacitors are rated at 400 volts or higher. Capacitors are either silver-mica, or plastic-molded. Values selected by rotary switch. Housed in attractive bakelite case. Test leads included. Shpg. Wt. 2 lbs.

ISOLATION TRANSFORMER KIT

This handy unit provides complete isolation from the power line and controls line voltage for testing purposes. Voltage is variable from 90 volts to 130 volts allowing checks of equipment under adverse conditions such as low line voltage. The transformer is rated at 100 watts continuously or 200 watts intermittently. An easy-to-read panel meter monitors the output voltage. The IT-1 is fused to protect main fuses. Shpg. Wt. 9 lbs.

VIBRATOR POWER SUPPLY KIT

These compact, high-quality power supply kits are designed to replace the power supplies of receivers, small public address systems, or even miniature transmitters, so that they can be used with conventional 6 or 12-volt batteries. Ideal for use in boats, automobiles, light aircraft or in many field applications. Each unit provides 260 volts DC output at up to 60 milliamperes. Measures 4½" H. x 4" W. x 3⅞" D. Shpg. Wt. 4 lbs.

VARIABLE VOLTAGE REGULATED POWER SUPPLY KIT

Handy for the laboratory, ham shack or service shop the PS-3 provides DC plate voltage and AC filament voltage for all types of circuits. DC output can be controlled manually from 0 to 500 volts. Power supply furnishes B+ and also provides 6.3 volts AC at up to 4 amperes for filaments. Both B+ output and filament voltage output are isolated from ground, eliminating shock hazard. A large 4½" meter on the front panel reads output voltage or output current selectable with a panel switch. Shpg. Wt. 17 lbs.

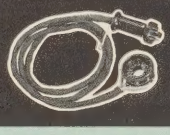
VARIABLE VOLTAGE REGULATED POWER SUPPLY KIT

Experimenters and electronic engineers involved in the design of electronic equipment, or new circuits, will find the PS-4 invaluable in their work. This handy unit eliminates the need for building up a separate power supply for each new circuit tried and delivers variable regulated B+, variable bias voltage, and filament voltage for countless applications in laboratories and work shops. The regulated B+ output is continuously variable from 0 to 400 volts DC at up to 100 ma (125 ma maximum) depending upon the setting of the voltage control on the front panel. The bias voltage is variable from 0 to —100 volts DC at 1 ma. Filament voltage of 6.3 volts AC at 4 amps is also available. Voltage and current output are both continuously monitored by separate panel meters. Output terminals are separate and well insulated from chassis ground for use in AC-DC work. Voltage regulation is excellent, and a convenient off-standby-on switch is provided. Shpg. Wt. 16 lbs.

HEATHKIT®



HEATHKIT TC-3 $39.95





save time aligning radios

HEATHKIT TO-1
$16.95



HEATHKIT CC-1 $24.95

trace signals by sight and sound



HEATHKIT T-4 $19.95

KEEP COSTS DOWN – PROFITS UP –

TUBE CHECKER KIT

The TC-3 is designed to check all tubes encountered in everyday radio and TV servicing. Sockets are provided for 4-pin, 5-pin, 6-pin, 7-pin large, 7-pin miniature, 7-pin sub-miniature, octal, loctal and 9-pin miniature tubes. A blank socket facilitates any newly added tube types. A 10-lever switch lets you connect any element to any other element regardless of the pin numbers involved. Tube condition is indicated on an easy-to-read 3½" meter with multi-color "good-?-bad" scale. A neon bulb indicator shows filament circuit continuity and leakage or shorts between elements. Spring loaded roll chart mechanism lets chart run freely throughout its entire length without binding. Thumb wheel drive knobs are located on each side for either hand operation. Light weight and compact, the TC-3 is ideally suited for portable applications. Both roll chart and meter are illuminated to facilitate use in darkened areas. Shpg. Wt. 12 lbs.

TV PICTURE TUBE TEST ADAPTER: Ready-assembled for use with the Heathkit TC-3 or earlier model TC-2. Consists of a 12-pin TV tube socket, 4′ cable, octal connector and necessary technical data. No. 355. Shpg. Wt. 1 lb. $4.50.

TEST OSCILLATOR KIT

Speed up alignment of all modern type superheterodyne broadcast receivers. Five fixed-tuned frequencies of 262 kc, 455 kc, 465 kc, 600 kc and 1400 kc provide instant selection of the proper frequency for RF and IF alignment. Two switch-selected crystal sockets are also provided. RF output may be either unmodulated or modulated, or the audio may be used separately. Output level is adjusted by means of a continuously variable control. A pre-assembled and pre-aligned frequency selector switch greatly simplifies construction. Highly accurate and dependable, the TO-1 offers time-saving convenience in either the service shop or production line. Shpg. Wt. 4 lbs.

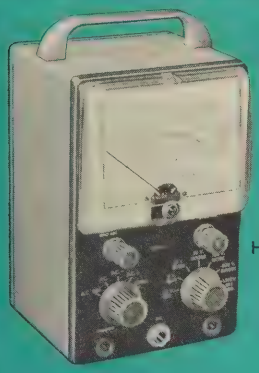
CATHODE RAY TUBE CHECKER KIT

Show your customer the condition of his TV picture tube right in his own home. The CC-1 checks all electro-magnetic deflection-type tubes using a duo-decal (12-pin) base. The instrument tests for short, leakage and emission capabilities while a separate test is provided for beam current. Special provision is made for the actual observation of the gun aperture on the face of the CRT. The CC-1 is AC power transformer operated and supplies all operating voltages to the cathode ray tube. No tubes to burn out or replace, it is designed to last a lifetime. A permanent test cable with CRT socket and anode connector is included with kit. Housed in a handsome portable case with a handy tube set-up chart on the inside of the cover. Shpg. Wt. 10 lbs.

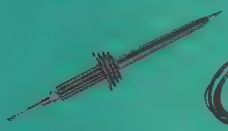
VISUAL-AURAL SIGNAL TRACER KIT

Here is a high-gain signal tracer providing you with both visual and aural checks of RF, IF and audio signals in AM and FM receiver circuits or transistor-type radios. A unique "noise locator" circuit makes it possible to locate noisy and intermittent components. The RF and audio inputs are combined into one handy probe. A switch mounted on the probe permits fast, easy selection of either RF or audio. Signal strength is indicated both aurally and visually by a 3½" PM speaker and an electron beam "eye" tube. Conveniently doubles as a utility amplifier when servicing record changers, tuners, microphones, musical instrument pickups, etc. It may also be used for a test speaker or a substitution transformer. The versatility of this fine kit and its low price make it a truly worthwhile investment. Shpg. Wt. 5 lbs.

WITH DEPENDABLE HEATHKIT® TEST INSTRUMENTS!



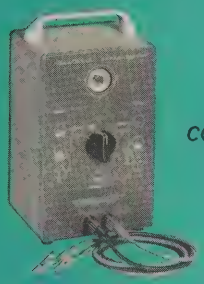
HEATHKIT V7-A
$25.95



30,000 VOLT HIGH VOLTAGE PROBE KIT
Shpg. Wt. 2 lbs.
No. 336
$4.50



ETCHED CIRCUIT RF PROBE KIT
Shpg. Wt. 1 lb.
No. 309-C
$3.50



check condensers fast

HEATHKIT CT-1 $7.95



fits your pocket

HEATHKIT M-1 $17.95



HEATHKIT MM-1
$29.95

ETCHED CIRCUIT VTVM KIT

You'll use this famous kit more than any other instrument you own. Timeproven for dependability, accuracy and overall quality, the V7-A is useful in countless applications. Use it to measure AC voltage (RMS), AC voltage (peak-to-peak), DC voltage and resistance. Features seven AC (RMS) and DC voltage ranges from 0-1.5, 5, 15, 50, 150, 500 and 1500. In addition there are seven peak-to-peak AC ranges of 0-4, 14, 40, 140, 400, 1400 and 4,000. Seven ohmmeter ranges provide multiplying factors of X 1, X 10, X 100, X 1,000, X 10k, X 100k and X 1 megohm. Measures .1 ohm to 1,000 megohms. A zero-center scale db range is also provided. The high 11-megohm input impedance of the V7-A prevents "loading" of the circuit under test resulting in much more accurate readings than it is possible to obtain with other types of voltmeters. Precision 1% resistors are used for high accuracy and an etched circuit board makes construction extremely simple. Front panel controls consist of a rotary function switch and a rotary range selector switch, zero-adjust and ohms-adjust controls. A large 4½" panel meter is used for indication with clear, sharp calibrations on all ranges. Battery and test leads are included with kit. Shpg. Wt. 7 lbs.

IN-CIRCUIT CAPACI-TESTER KIT

Save valuable time by checking capacitors for "open" or "short" right in the circuit. The CT-1 eliminates the need for disconnecting a capacitor lead to check the part. It will detect open capacitors from about 50 mmf up not shunted by an excessively low resistance value. Detects shorted capacitors up to 20 mfd not shunted by less than 10 ohms. Intermittent condensers are noted by flickering of the electron beam "eye" tube indicator. The CT-1 is not intended to indicate value, detect leakage, nor check electrolytic condensers. Checks all bypass, blocking, and coupling capacitors of the paper, mica and ceramic types. A 5-position function switch controls the power of the instrument and selects the test being made. Test leads supplied with kit. Shpg. Wt. 5 lbs.

HANDITESTER KIT

Whether you're a hobbyist, a home experimenter, handy man or professional you'll find a thousand uses for this handy kit. Ideal for measuring line voltage, checking batteries, testing continuity of circuits, automotive electric repairs, repairing home appliances, servicing high fidelity systems or servicing radio or TV sets in the home. Measures AC or DC voltage at 0-10, 30, 300, 1000 and 5000 volts. Direct current ranges are 0-10 ma and 0-100 ma. Ohmmeter ranges are 0-3000 (30 ohm center scale) and 0-300,000 (3000 ohm center scale). Completely portable, the instrument requires no external source of power. Slips easily into your tool box, glove compartment, coat pocket or desk drawer. Shpg. Wt. 3 lbs.

20,000 OHMS/VOLT VOM KIT

The MM-1 provides you with wide voltage, current, resistance and db ranges to cover literally hundreds of applications. Sensitivity is 20,000 ohms-per-volt DC and 5,000 ohms-per-volt AC. Function and range switches provide full scale settings of 0-1.5, 5, 50, 150, 500, 1500 and 5000 volts for both AC and DC. Current ranges are 0-150 ua, 15 ma, 150 ma, 500 ma and 15 a. Resistance ranges are R x1 (15 ohm center scale), R x 100 (1500 ohms center scale), and R x 10 k (150,000 ohms center scale). Measures resistance from as low as .2 ohms to as high as 20 megohms. Db coverage is —10 db to +65 db. Maximum accuracy is assured through the use of 1% voltage divider resistors. Insensitive to RF fields, the MM-1 is ideal for transmitter work. Standard commercial batteries are used for power. Shpg. Wt. 6 lbs.

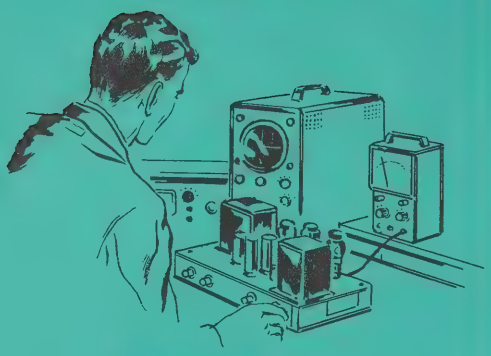
RELIABLE HEATHKIT TEST



HEATHKIT SG-8 $19.50

RF SIGNAL GENERATOR KIT

Engineered to fill the requirements for a reliable service instrument at moderate cost, the SG-8 provides an excellent means of aligning RF, IF and tuned circuits of all kinds. Use it also to save time in tracing signals in faulty RF, IF or audio circuits. Provides extended frequency coverage in five bands from 160 kc to 110 mc on fundamentals and on up to 220 mc on calibrated harmonics of the fundamental frequencies. The entire oscillator circuit is built on a special sub-chassis, allowing neat and logical placement of components for high circuit efficiency. Prewound and calibrated coils make calibration unnecessary for service applications. RF output is in excess of 100,000 microvolts, controlled by both step and continuously variable controls. RF signal may be modulated internally at 400 CPS or externally at other frequencies. The 400 CPS signal can also be used separately for audio tests if desired. AF output of 2-3 volts is available for audio testing. Construction is simple and straight-forward, with high quality components used throughout. Cabinet size is 9½" W. x 6½" H. x 5" D. Complete with output cable and instructions. Shpg. Wt. 8 lbs.



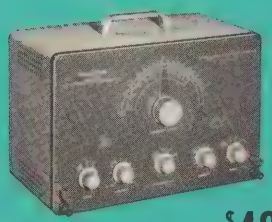


Measure power output

HEATHKIT AW-1 $29.50

AUDIO WATTMETER KIT

An ideal meter for use in testing or as a monitor, the AW-1 will quickly and accurately measure the power output of your high fidelity amplifier or audio equipment. Five power ranges cover 0-5 mw, 50 mw, 500 mw, 5 w and 50 w full scale. Db ranges cover —10 db to +30 db. All indications are read directly on the large 4½" 200 ua meter. Frequency response is ±1 db from 10 CPS to 250 kc. Non-inductive load resistors are built in for 4, 8, 16 or 600 ohms impedance. Features precision multiplier resistors for high accuracy and a crystal diode bridge for wide-range frequency response. Easy-to-build and easy-to-use with complete instructions supplied. Shpg. Wt. 7 lbs.



HEATHKIT AG-10 $49.95

SINE-SQUARE GENERATOR KIT

Laboratory quality sine and square waves are produced by this instrument for a great variety of applications. Both sine and square wave outputs may be used simultaneously without affecting either waveform. Frequency response is within ±1.5 db from 20 CPS to 1 mc with less than .25% sine wave distortion, 20 to 20,000 CPS. Output impedance on sine wave 600 ohms, on square wave 50 ohms (except on 10 volt ranges). Square wave rise time is less than .15 microseconds. Features separate step and variable output attenuators in ranges of 10, 1 and .1 volts for both sine and square wave with an extra range of .01 volt on the sine wave. Shpg. Wt. 12 lbs.

fast, easy check of all condensers



HEATHKIT C-3 $19.50

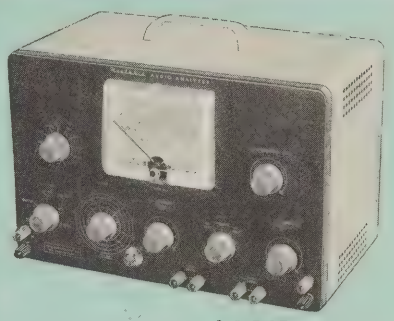
CONDENSER CHECKER KIT

A complete check of all types of condensers can be made with this outstanding instrument. Checks condenser and resistor values as well as their operating characteristics. Also checks for shorts, opens, leakage and intermittents. Capacity measurements are made in four ranges covering values from 0.00001 mfd to 1,000 mfd. Measures resistance from 100 ohms to 5 megohms in two ranges. An electron beam "eye" tube indicates balance of bridge and leakage. The leakage test provides switch selection of five polarizing voltages, from 25 to 450 volts DC. A spring return test switch eliminates shock hazard to the operator by automatically discharging condenser after test. For safety of operation the circuit is entirely transformer operated and the instrument is housed in an attractively styled cabinet measuring 9½" W. x 6½" H. x 5" D. All readings are taken directly from the calibrated scale without any involved calculation. Shpg. Wt. 7 lbs.

INSTRUMENTS...FOR LAB AND SHOP

AUDIO ANALYZER KIT

Almost a complete laboratory in itself, this audio analyzer combines the function of an AC VTVM, audio wattmeter and a complete intermodulation distortion analyzer in one compact, versatile instrument. Careful design and thoughtful circuit layout provides for easy assembly and eliminates unnecessary duplication of parts resulting in "big" savings for you without sacrificing quality or performance. VTVM ranges are: 0-.01, .03, .1, .3, 1, 3, 10, 30, 100 and 300 volts (RMS). Db scale reads from —65 to +52 dbm. Wattmeter ranges are: 0.15 mw, 1.5 mw, 15 mw, 150 mw, 1.5 w, 15 w and 150 w. IM scales are 1%, 3%, 10%, 30% and 100% full scale. Provides internal load resistance of 4, 8, 16 or 600 ohms. Switch selection of internal or external load. Internal generator frequencies are 60 cycles and 6 kc. All basic operations of the instrument can be accomplished by connecting the output leads to an amplifier input and the input leads to the amplifier output. Use it to measure noise, frequency response, power output, gain, power supply ripple, etc. An outstanding instrument for anyone active in the design or repair of audio equipment. Shpg. Wt. 13 lbs.

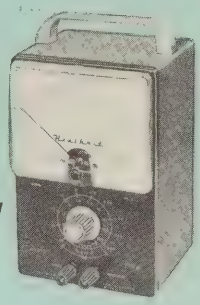


HEATHKIT AA-1 $49.95

AUDIO VTVM KIT

Emphasizing stability, broad frequency response and sensitivity, the model AV-3 handles AC measurements from a low value of 1 millivolt to a maximum of 300 volts RMS. Features a large easy-to-read 4½" 200 microampere meter, with increased damping in the meter circuit for stability in low frequency tests. AC voltage ranges are 0-.01, .03, .1, .3, 1, 3, 10, 30, 100 and 300 volts full scale. Db ranges cover —52 to +52 db. 1% precision multiplier resistors are used for maximum accuracy. Frequency response is within ±1 db from 10 CPS to 400 kc and is usable for tests well beyond these limits. An extremely stable circuit with high input impedance (1 megohm at 1,000 CPS). Shpg. Wt. 6 lbs.

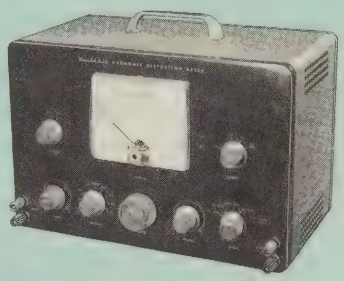
Measure critical AC voltages



HEATHKIT AV-3 $29.95

HARMONIC DISTORTION METER KIT

Accurate measurements of harmonic distortion in an amplifier are easily made at any or all frequencies between 20 and 20,000 CPS with this fine instrument. Distortion is read on a clearly marked panel meter in ranges of 0-1, 3, 10, 30 and 100% full scale. Full scale voltage ranges of 0-1, 3, 10 and 30 volts provide the initial reference settings. Signal-to-noise ratio is measured on a separate meter scale calibrated in db. Features high input impedance and 1% precision resistors. Instructions provided for easy assembly and operation. Ideal for use with Heathkit model AG-9A Audio Generator. Shpg. Wt. 13 lbs.



HEATHKIT HD-1 $49.50

AUDIO SIGNAL GENERATOR KIT

With this generator as a signal source you can forget about unknown input variations and distortion when working with audio circuits. All frequencies may be tuned well within ±5% accuracy and distortion is actually less than .1 of 1% between 20 CPS and 20,000 CPS. Frequency selection is uniquely accomplished through the use of three rotary switches which select two significant figures and a multiplier. Frequency can be varied in steps of 1 CPS from 10 to 100 CPS and a 4-position multiplier switch increases this range in multiples of 10, providing an overall range of 10 to 100,000 CPS. The attenuator system operates in steps of 10 db and is also calibrated in eight full scale meter ranges of 0-.003, .01, .03, .1, .3, 1 (600 ohm source), 3 and 10 volts RMS (high impedance source). Output is indicated on a large 4½" panel meter calibrated in volts and db. Shpg. Wt. 10 lbs.



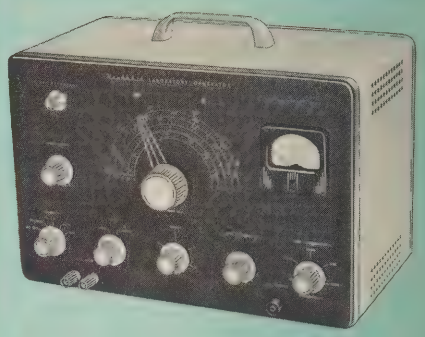
HEATHKIT AG-9A $34.50

HEATHKIT®

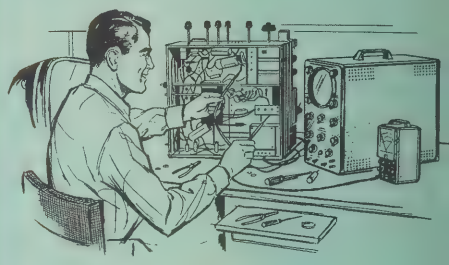
KITS FOR FASTER, MORE EFFICIENT TESTING

LABORATORY GENERATOR KIT

Providing you with precision alignment facilities for design and development work, as well as in servicing, the LG-1 establishes a new standard of performance for kit instruments. It covers a frequency range of 100 kc to 30 mc, all on fundamentals, which are divided into five easy-to-read calibrated bands. Ideal for checking RF and IF stage gain, overall circuit sensitivity, demodulator performance, or selectivity. A meter switch selects readings of output voltage in microvolts or percent of modulation on the accurately calibrated 200 microampere panel meter. Metered output is in excess of 100,000 microvolts, and both fixed step and variable output attenuation are possible. Circuit operation is stabilized by copper-plated double shielding, plus voltage regulation in the power supply. Extremely flexible, the LG-1 has provisions for internal modulation or external modulation and uses a Colpitts RF oscillator followed by an amplifier which is grid modulated by the Colpitts AF oscillator and cathode follower circuit. DC is fed through the meter switch from the fine attenuator control for RF levels and from the AF cathode follower for modulation percentage. Modulation is variable from 0 to 50% and is at a frequency of 400 cycles internally, or can be modulated externally at frequencies between 60 CPS and 10,000 CPS. The power supply is transformer operated for safety and high efficiency and incorporates a line filter, selenium rectifier, a 3-section electrolytic filter condenser, filter choke and OB-2 voltage regulator for stable performance. An instrument you will be truly proud to own. Shpg. Wt. 16 lbs.

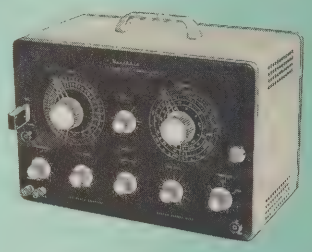


HEATHKIT LG-1 $48.95



TV ALIGNMENT GENERATOR KIT

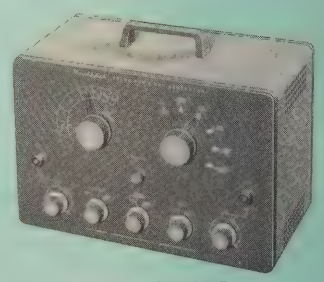
The TS-4A provides you with all of the essential facilities required for alignment of FM, monochrome TV or color TV sets. The all-electronic sweep circuit employs a controllable inductor which varies frequency by magnetic means. The sweep circuit operates on fundamentals covering the range of 3.6 mc to 220 mc in four bands. Sweep deviation is smoothly controllable from 0 up to as high as 42 mc, depending on frequency. Crystal marker and variable marker oscillators are built-in. The crystal included with the kit provides output at 4.5 mc and multiples thereof. The variable marker provides output from 19 to 60 mc on fundamentals and from 57 to 180 mc on harmonics. Shpg. Wt. 16 lbs.



HEATHKIT TS-4A $49.50

COLOR BAR AND DOT GENERATOR KIT

The growing number of color TV set owners emphasizes the need for a high quality, low cost color TV test instrument such as the CD-1. It combines the two basic color servicing instruments, a color bar and white dot generator, in one versatile and portable unit. Six different test patterns are available: white dots, cross hatch, horizontal and vertical bars, 10 vertical color bars, and a new shading bar pattern for screen and background adjustments to achieve correct gray-scale tracking. Voltage regulated power supply features long-life silicon rectifiers. Kit includes three crystals and test leads plus an informative instruction manual. Shpg. Wt. 13 lbs.



HEATHKIT CD-1 $59.95

EASY TIME PAYMENTS

Let your Heathkit test instruments earn money for you now . . . while you pay for them in easy installments. See order blank for complete details on the Heath Time Payment Plan.

PARCEL POST RATE TABLE

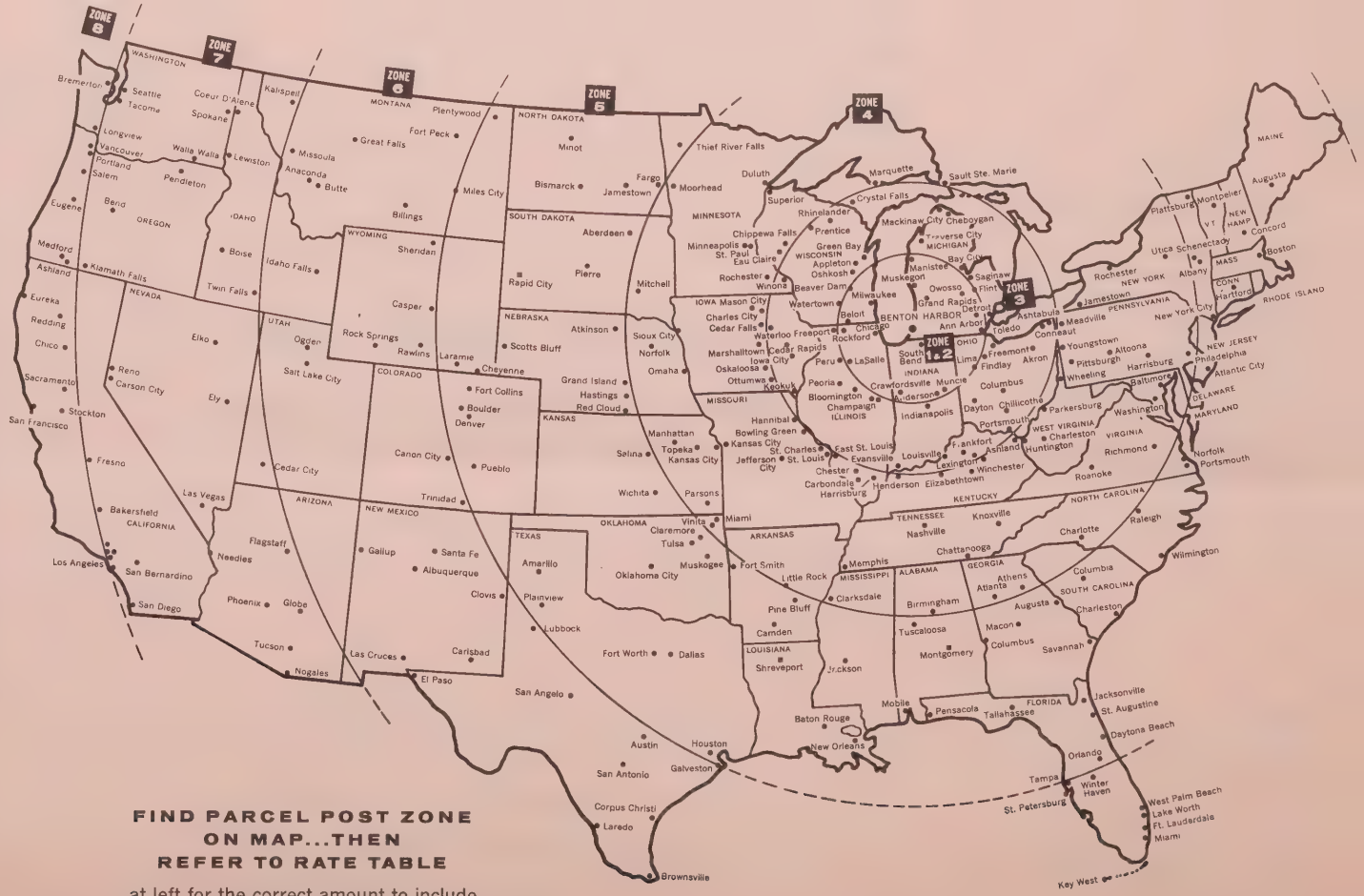
Postal Regulations...limit parcel post shipments to 20 pounds to zones 3 to 8, and 40 pounds to zones 1 and 2. EXCEPTION: Shipments up to 70 pounds will still be accepted to RFD addresses, and to APO numbers.

Ship. Wt.	Local	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
to 1 lb.	$.18	$.23	$.23	$.24	$.26	$.28	$.30	$.32
2 lbs.	.20	.27	.29	.31	.36	.40	.46	.51
3 lbs.	.21	.31	.34	.38	.45	.52	.61	.69
4 lbs.	.23	.35	.39	.45	.54	.64	.76	.87
5 lbs.	.24	.39	.44	.52	.63	.76	.91	1.05
6 lbs.	.26	.43	.49	.59	.73	.88	1.06	1.23
7 lbs.	.27	.47	.54	.66	.82	1.00	1.22	1.41
8 lbs.	.29	.51	.60	.73	.91	1.12	1.37	1.59
9 lbs.	.30	.55	.65	.80	1.00	1.24	1.52	1.77
10 lbs.	.32	.59	.70	.87	1.10	1.36	1.67	1.95
11 lbs.	.33	.63	.75	.93	1.19	1.48	1.82	2.13
12 lbs.	.34	.67	.80	1.00	1.28	1.60	1.98	2.31
13 lbs.	.36	.71	.85	1.07	1.37	1.72	2.13	2.49
14 lbs.	.37	.75	.90	1.14	1.47	1.84	2.28	2.67
15 lbs.	.39	.79	.96	1.21	1.56	1.96	2.43	2.85
16 lbs.	.40	.83	1.01	1.28	1.65	2.08	2.58	3.03
17 lbs.	.42	.87	1.06	1.35	1.74	2.20	2.74	3.21
18 lbs.	.43	.91	1.11	1.42	1.84	2.32	2.89	3.39
19 lbs.	.45	.95	1.16	1.49	1.93	2.44	3.04	3.57
20 lbs.	.46	.99	1.21	1.56	2.02	2.56	3.19	3.75

IMPORTANT:
Any parcel post rate changes enacted since August 1958 are not reflected in this table. If such changes have taken place, check with your Postmaster, and send enough postage to cover new rate.

DISTANCE FROM BENTON HARBOR

Local Zone..In Benton Harbor
Zones 1 & 2..not over 150 mi.
Zone 3 .....151 to 300 mi.
Zone 4 .....301 to 600 mi.
Zone 5.....601 to 1000 mi.
Zone 6 .....1001 to 1400 mi.
Zone 7 ..... 1401 to 1800 mi.
Zone 8.....Over 1800 mi.


ZONE 8
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 1 & 2
BENTON HARBOR
WASHINGTON
OREGON
CALIFORNIA
IDAHO
NEVADA
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
INDIANA
OHIO
MICHIGAN
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VT
NEW HAMP
MASS
CONN
RHODE ISLAND
NEW JERSEY
DELAWARE
MARYLAND
Bremerton
Seattle
Tacoma
Coeur D'Alene
Spokane
Kalispell
Longview
Vancouver
Portland
Salem
Walla Walla
Lewiston
Pendleton
Eugene
Bend
Medford
Ashland
Klamath Falls
Eureka
Redding
Chico
Sacramento
Stockton
San Francisco
Fresno
Bakersfield
Los Angeles
San Bernardino
San Diego
Reno
Carson City
Ely
Elko
Twin Falls
Boise
Idaho Falls
Ogden
Salt Lake City
Cedar City
Las Vegas
Flagstaff
Needles
Phoenix
Globe
Tucson
Nogales
Missoula
Great Falls
Anaconda
Butte
Billings
Miles City
Sheridan
Casper
Rock Springs
Rawlins
Laramie
Cheyenne
Fort Collins
Boulder
Denver
Canon City
Pueblo
Trinidad
Gallup
Santa Fe
Albuquerque
Las Cruces
Carlsbad
Plentywood
Fort Peck
Minot
Bismarck
Jamestown
Fargo
Aberdeen
Pierre
Rapid City
Scotts Bluff
Atkinson
Sioux City
Norfolk
Omaha
Grand Island
Hastings
Red Cloud
Manhattan
Topeka
Kansas City
Selina
Wichita
Parsons
Vinita
Claremore
Tulsa
Oklahoma City
Amarillo
Plainview
Clovis
Lubbock
Fort Worth
Dallas
Shreveport
Camden
Pine Bluff
Little Rock
Fort Smith
Muskogee
Miami
Jefferson City
St. Charles
St. Louis
East St. Louis
Evansville
Louisville
Lexington
Winchester
Frankfort
Ashland
Huntington
Charleston
Richmond
Roanoke
Norfolk
Portsmouth
Chester
Carbondale
Harrisburg
Henderson
Elizabethtown
Bowling Green
Hannibal
Champaign
Bloomington
Peoria
Indianapolis
Muncie
Anderson
Crawfordsville
Kokomo
Ottumwa
Oskaloosa
Iowa City
Cedar Rapids
Marshalltown
Waterloo
Freeport
Rockford
Chicago
Beloit
Milwaukee
Watertown
Oshkosh
Appleton
Green Bay
Chippewa Falls
Minneapolis
St. Paul
Eau Claire
Rochester
Winona
Prentice
Rhinelander
Superior
Duluth
Thief River Falls
Moorhead
Marquette
Crystal Falls
Sault Ste. Marie
Mackinaw City
Cheboygan
Traverse City
Bay City
Saginaw
Flint
Detroit
Grand Rapids
Muskegon
Manistee
Owosso
Beaver Dam
Ann Arbor
Toledo
Ashtabula
Conneaut
Meadville
Jamestown
Rochester
Utica
Schenectady
Albany
Plattsburg
Montpelier
Augusta
Concord
Boston
Hartford
New York City
Philadelphia
Atlantic City
Baltimore
Washington
Harrisburg
Altoona
Pittsburgh
Youngstown
Wheeling
Parkersburg
Charleston
Huntington
Ashland
Portsmouth
Dayton
Chillicothe
Columbus
Akron
Findlay
Lima
Freemont
South Bend
Elkhart
Niles
Benton Harbor
Kalamazoo
Jackson
Lansing
Port Huron
Saginaw
Flint
Detroit
Grand Rapids
Muskegon
Manistee
Owosso
Beaver Dam

USE THIS HANDY ENVELOPE WHEN ORDERING

Fold, enclosed order blank with remittance seal, stamp and mail.

FOLD 1

BEFORE SEALING...

Have you:

a) Filled out order blank completely?

b) Included postage with remittance on cash order?

c) Completed credit form for time payment order?

d) Given us your correct post office address where this may not be the same as the name of your suburb?

FOLD 2

NOTE—To provide additional savings and faster service in filling your order, Insurance fees on Parcel Post shipments have been discontinued. In event you have a damage claim, write directly to the HEATH CO. and not to the post office.

FOLD 3

HEATH COMPANY

BENTON HARBOR, MICHIGAN

PLACE STAMP HERE

NAME

ADDRESS

CITY & STATE

FOLD 4

INCLUDE MONEY FOR POSTAGE

with your orders as we must pay postage on parcel post packages before we can send your merchandise. Don't worry about sending more than the correct amount—if you send us too much, every cent extra will be promptly returned to you. You pay only the exact postage needed for your order.

F-02

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

BENTON HARBOR, MICHIGAN

PHONE • YUKON 3-3961

☐ CASH
☐ C.O.D. 20% deposit required
☐ TIME PAY.

ORDER BLANK

1 PLEASE PRINT OR WRITE NAME AND ADDRESS PLAINLY

NAME_____

STREET ADDRESS_____ RURAL ROUTE | BOX NO.

POST OFFICE_____ MAIL ZONE | STATE

2 SHIP TO ANOTHER ADDRESS? Give directions here.

NAME_____

SHIPPING ADDRESS_____

POST OFFICE_____ STATE

3 CHECK HOW YOU WANT ORDER SHIPPED ▶ Best Way ☐ Parcel Post ☐ Motor Freight ☐ Express ☐

ON EXPRESS ORDERS If station is in different town than your post office address, show name of town where shipment should be sent:

TOWN_____ STATE

4 IF THIS IS YOUR FIRST ORDER TO US, please check here ☐

5 IF YOU HAVE MOVED SINCE YOUR LAST ORDER— write your old address here:

STREET ADDRESS_____

CITY_____ STATE

6 TO SERVE YOU BETTER in the future, we would appreciate your answering the following questions:

OCCUPATION_____

APPLICATION:
☐ Hobby ☐ Radio/TV Service
☐ Education Institution
☐ Industrial ☐ Other_____

Have you built other kits?
☐ Yes ☐ No If yes, what kinds:

What new HEATHKITS would you like us to bring out?

How did you first hear of HEATHKITS?
☐ Catalog ☐ Magazine
☐ Trade Show ☐ Recommendation
☐ Other_____

QUANT.	MODEL	KIT DESCRIPTION	SECTION A CASH ORDER PRICE EACH	SECTION A CASH ORDER TOTAL	Shipping Wt. Lbs.	SECTION B TIME PAYMENT PRICE EACH	SECTION B TIME PAYMENT TOTAL

SEE REVERSE SIDE for time payment details.

TIME PAYMENT ORDERS will be shipped only by Express or Motor Freight.

PARCEL POST orders should include postage for weight shown. Often orders for two or more kits can be shipped in a larger single carton. On orders involving several kits, allow for a few more pounds total shipping weight. Excess postage will be promptly refunded.

EXPRESS and MOTOR FREIGHT ORDERS should not include transportation charges—they will be collected at time of delivery.

IMPORTANT. Please use a separate sheet for all correspondence, to speed your order and assure a prompt reply to your letter.

All prices quoted are Net F.O.B. Benton Harbor, Michigan, and apply to Continental U. S. and Possessions only!

All prices and specifications subject to change without notice.

Orders from FPO's, and APO's must be accompanied by full payment including postage.

All C.O.D. orders must be accompanied by 20% deposit.

	SECTION A CASH ORDER	SECTION B TIME PAYMENT
7 Total amount cash order.		**8** Total amount time pay order
Add 3% sales tax on all deliveries in the State of Mich.		Add 3% on total order on all deliveries in Michigan.
Amount for parcel post. Do not remit for express charges.		TOTAL
Amount due Heath from previous order.		DOWN PAYMENT (at least 10% of total)
TOTAL AMOUNT ☐ Remitted. ☐ Ship Bal. C.O.D. 20% deposit required		UNPAID BAL. (total order less down payment)

Time Payment Plan available in Continental United States and the Hawaiian Islands only on orders having cash value of $55 or more. On Time Payment Orders be sure to complete the Time Payment Plan Application on reverse side.

Heath's Easy Time Payment Plan

Time Payment Plan available only on orders having cash price of $55.00 or more.
Available in the Continental United States and the Hawaiian Islands only.

In order to assure prompt shipment of your new Heathkit under the Time Payment Plan, please observe the following instructions.

1. First fill out section "B" of the Order Blank on the reverse side of this sheet, designating the Heathkits you wish to buy. If your order totals $55.00 or more, you may use the Time Payment Plan.
2. Insert the amount of your down payment in the Time Payment Agreement below (at least 10% of your total order). A larger down payment reduces carrying charge and monthly payment.
3. Refer to the amounts on the Easy Payment Chart which correspond to the unpaid balance on your order (total price of order less down payment). From this chart enter your monthly payments on the Time Payment Agreement.
4. Sign your Time Payment Agreement in ink with your usual signature, and fill in the credit statement completely.
5. Send this application and your down payment to Heath Company, Benton Harbor, Michigan.

EASY PAYMENT CHART

Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*
less than $40.00	$ 4	$ 5	$170.01-180	$18	$17
$ 40.01-50	5	5	180.01-190	19	18
50.01-60	6	6	190.01-200	20	19
60.01-70	7	7	200.01-210	21	20
70.01-80	8	8	210.01-220	22	21
80.01-90	9	9	220.01-230	23	22
90.01-100	10	10	230.01-240	24	22
100.01-110	11	11	240.01-250	25	23
110.01-120	12	11	250.01-260	26	24
120.01-130	13	12	260.01-270	27	25
130.01-140	14	13	270.01-280	28	26
140.01-150	15	14	280.01-290	29	27
150.01-160	16	15	290.01-300	30	28
160.01-170	17	16	Over $300.00 write for details		

*All monthly payments are for amount shown except for last payment which is for the odd amount remaining due.

TIME PAYMENT AGREEMENT

Please answer all questions fully to help establish your credit promptly. Write your order on the reverse side.

NOTE: Time payment agreement cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of $_____ on the Easy Payment cost of the equipment on the reverse side. I will pay $_____ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.

Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or repossess the equipment. If you shall repossess, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

If this order is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. This contract is to be governed by the laws of the State of Michigan.

Enter Date_____ Sign Here_____

CREDIT STATEMENT

(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

FULL NAME_____ (Print) Age_____ Military Serial No._____ (if serviceman)

WIFE'S NAME_____ (Print) No. of Children and names_____

Residence_____ City_____ State_____ How Long_____

☐ Own or Buying ☐ Rent ☐ Live with Parents No. of Rooms_____ Paid Monthly $_____ Phone No._____

Landlords Name and Address (If Owned Mtg. Held By)_____

Previous Address_____ How Long_____ Previous Address_____ How Long_____
(If less than 3 years at present address)

Previous Landlord_____ Address_____

Employed by_____ Address_____ Business Phone No._____

Position_____ How Long_____ Dept or Badge No._____ Salary $_____

Previous Employer_____ Address_____ How Long_____
(If less than 3 years at present employment)

Wife's Employer_____ Address_____ Phone_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Other Income— Give Details_____ Total Family Income $_____

CREDIT REFERENCE (Give Your Bank and 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

Your Bank_____ Address_____ Type of Account_____

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Nearest Relative_____ Address_____ Relationship_____
(Do not list those with whom you are living)

F-02

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

BENTON HARBOR, MICHIGAN

PHONE • YUKON 3-3961

☐ CASH
☐ C.O.D. 20% deposit required
☐ TIME PAY.

ORDER BLANK

1 PLEASE PRINT OR WRITE NAME AND ADDRESS PLAINLY

NAME_____

STREET ADDRESS_____ RURAL ROUTE | BOX NO.

POST OFFICE_____ MAIL ZONE | STATE

2 SHIP TO ANOTHER ADDRESS? Give directions here.

NAME_____

SHIPPING ADDRESS_____

POST OFFICE_____ STATE

3 CHECK HOW YOU WANT ORDER SHIPPED ▶ Best Way ☐ Parcel Post ☐ Motor Freight ☐ Express ☐

ON EXPRESS ORDERS if station is in different town than your post office address, show name of town where shipment should be sent:

TOWN_____ STATE

4 IF THIS IS YOUR FIRST ORDER TO US, please check here ☐

5 IF YOU HAVE MOVED SINCE YOUR LAST ORDER— write your old address here:

STREET ADDRESS_____

CITY_____ STATE

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APPLICATION:
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☐ Education Institution
☐ Industrial ☐ Other_____

Have you built other kits?
☐ Yes ☐ No If yes, what kinds:

What new HEATHKITS would you like us to bring out?

How did you first hear of HEATHKITS?
☐ Catalog ☐ Magazine
☐ Trade Show ☐ Recommendation
☐ Other_____

			SECTION A CASH ORDER			Shipping Wt. Lbs.	SECTION B TIME PAYMENT	
QUANT.	MODEL	KIT DESCRIPTION	PRICE EACH	TOTAL			PRICE EACH	TOTAL

SEE REVERSE SIDE for time payment details.

TIME PAYMENT ORDERS will be shipped only by Express or Motor Freight.

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EXPRESS and MOTOR FREIGHT ORDERS should not include transportation charges—they will be collected at time of delivery.

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7 Total amount cash order.			**8** Total amount time pay order	
Add 3% sales tax on all deliveries in the State of Mich.			Add 3% on total order on all deliveries in Michigan.	
Amount for parcel post. Do not remit for express charges.			TOTAL	
Amount due Heath from previous order.			DOWN PAYMENT (at least 10% of total)	
TOTAL AMOUNT ☐ Remitted. ☐ Ship Bal. C.O.D. 20% deposit required			UNPAID BAL. (total order less down payment)	

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EASY PAYMENT CHART

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50.01-60	6	6	190.01-200	20	19
60.01-70	7	7	200.01-210	21	20
70.01-80	8	8	210.01-220	22	21
80.01-90	9	9	220.01-230	23	22
90.01-100	10	10	230.01-240	24	22
100.01-110	11	11	240.01-250	25	23
110.01-120	12	11	250.01-260	26	24
120.01-130	13	12	260.01-270	27	25
130.01-140	14	13	270.01-280	28	26
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150.01-160	16	15	290.01-300	30	28
160.01-170	17	16	Over $300.00 write for details		

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(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

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WIFE'S NAME_____ (Print) No. of Children and names_____

Residence_____ City_____ State_____ How Long_____

☐ Own or Buying ☐ Rent ☐ Live with Parents No. of Rooms_____ Paid Monthly $_____ Phone No._____

Landlords Name and Address (If Owned Mtg. Held By)_____

Previous Address_____ How Long_____ Previous Address_____ How Long_____

(If less than 3 years at present address)

Previous Landlord_____ Address_____

Employed by_____ Address_____ Business Phone No._____

Position_____ How Long_____ Dept or Badge No._____ Salary $_____

Previous Employer_____ Address_____ How Long_____

(If less than 3 years at present employment)

Wife's Employer_____ Address_____ Phone_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Other Income— Give Details_____ Total Family Income $_____

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Your Bank_____ Address_____ Type of Account_____

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Nearest Relative_____ Address_____ Relationship_____

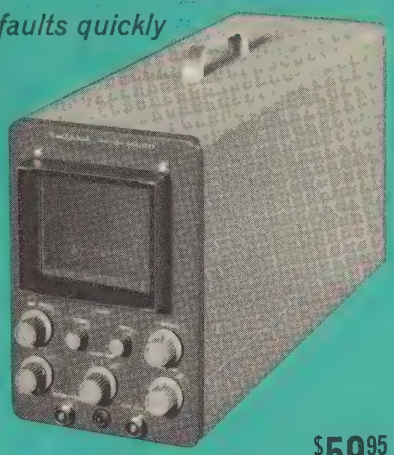
(Do not list those with whom you are living)

PUT YOUR HEATHKIT TO WORK FOR YOU *NOW!*

ELECTRONIC IGNITION ANALYZER KIT

Surveys show that 85% of all automobile tune-up troubles occur in ignition systems. An ignition analyzer can, in a matter of minutes, pin-point the trouble in a balky engine. The IA-1 lets you check the complete ignition system in operation by merely connecting two leads to observe the tell-tale spark patterns of the cylinders. Tracing the dynamic action of voltage in ignition systems on a fluorescent cathode-ray-tube screen, the IA-1 shows condition of the coil, condenser, points, plugs and ignition wiring. It will also indicate inequality of spark intensity, a poor spark plug, defective wiring—and will even identify the offending plug or wire. Also detects breaker-point bounce, an open condenser, or will allow the setting of dwell-time percentage for the points. Checks the dynamic performance of the ignition with the engine in operation (400 to 5,000 RPM) and shows complete engine cycle or just one cylinder at a time. The IA-1 is simple to use, with a minimum of controls, yet is completely flexible for all types of internal combustion engines where breaker points are accessible. The IA-1 is especially useful in locating stubborn defects which may show up only when the vehicle is in motion and under load if a vibrator-type converter is used to supply 115 VAC power. The two 10′ test leads supplied easily reach breaker points or spark plug wires. Shpg. Wt. 20 lbs.

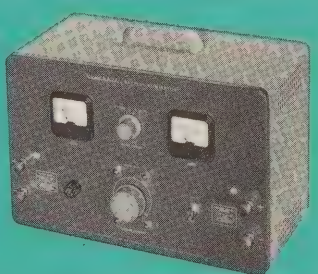
locate ignition system faults quickly



HEATHKIT IA-1 $59.95

"LOW RIPPLE" BATTERY ELIMINATOR KIT

Ideal for servicing transistor circuits and new "hybrid" automobile radios using both transistors and vacuum tubes, the BE-5 incorporates an extra low-ripple filter circuit which holds AC ripple down to less than .3%. It will power all the newest transistor-type circuits requiring 0 to 12 volts DC. The special filter circuit is built-in and the highly filtered 6 or 12 volt DC output is available at up to 5 amperes at a separate pair of output terminals. Another pair of output terminals is provided for output with the normal amount of filtering for use as a battery eliminator on conventional type auto radios, etc. The normal filtering supplies up to 15 amperes on a 6 volt range or up to 7 amperes on a 12 volt range. The output voltage is variable on both ranges from 0 to 8 volts, or from 0 to 16 volts. The BE-5 doubles as a battery charger or marine converter for small boats. Shpg. Wt. 21 lbs.



HEATHKIT BE-5 $39.95

GRID DIP METER KIT

An invaluable instrument in the ham shack, service shop or lab, the GD-1B can be used either as an oscillator or absorption wave meter. Align IF stages, traps and filters and use it in coil winding applications. A phone jack is provided for listening to "zero-beat". A complete set of prewound plug-in coils are provided for continuous frequency coverage from 2 mc to 250 mc. Shpg. Wt. 4 lbs.

ADDITIONAL PLUG-IN COILS: two extra plug-in coils are available for the GD-1B to extend the frequency coverage down to 350 kc. Dial correlation curves are included. Shpg. Wt. 1 lb. No. 341-A. $3.00.

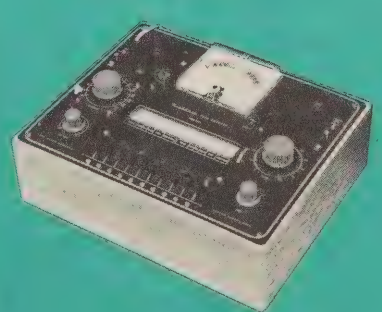


HEATHKIT GD-1B $21.95

TUBE CHECKER KIT

A good, all-around performer, the TC-2 tests for open, short, leakage, heater continuity and quality of commonly used tube types. Checks 4, 5, 6 and 7-pin, octal and loctal tubes, 7 and 9-pin miniature tubes and 5-pin hytron tubes. Shpg. Wt. 12 lbs.

PORTABLE TUBE CHECKER KIT: Identical to the TC-2 but housed in a rugged carrying case for portable applications. Shpg. Wt. 15 lbs. Heathkit TC-2P. $38.95.



HEATHKIT TC-2 $34.95

"CHEYENNE" MOBILE HAM TRANSMITTER KIT

The fun and excitement of mobile ham operation can be yours at minimum cost with this top-flight mobile transmitter. The efficient circuitry of the "Cheyenne" provides you with high power capabilities in mobile operation with minimum battery drain. The unit features up to 90 watts input on phone and covers 80, 40, 20, 15 and 10 meters. Features built-in VFO, modulator, four RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. Operating power may be obtained from the Heathkit MP-1 Power Supply. A spotting switch allows tuning the transmitter without going on the air. In addition to portable mobile convenience, the "Cheyenne" can be converted to a fixed station in a matter of minutes using an AC power supply. Shpg. Wt. 19 lbs.

"COMANCHE" MOBILE HAM RECEIVER KIT

A companion unit to the "Cheyenne" mobile transmitter the "Comanche" offers you beautiful styling, rugged construction and features top quality components throughout. It is an 8-tube superheterodyne ham band receiver operating on AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. Operates from your 12-volt car battery through the Heathkit MP-1 Mobile Power Supply. The "Comanche" is also convertible to a fixed station unit in minutes using an AC power supply. Circuit includes an RF stage, converter, two IF stages, two detectors, noise limiter, two audio stages and a voltage regulator. All oscillators are voltage regulated and temperature-compensated for high stability. Shpg. Wt. 19 lbs.

MOBILE POWER SUPPLY KIT

Completely transistorized, the MP-1 furnishes all the power required to operate the "Cheyenne" and "Comanche" Mobile Transmitter and Receiver. Featuring two 2N442 transistors in a 400 cycle switching circuit, it supplies a full 120 watts DC power with intermittent operation up to 150 watts. Tap-in battery post studs, 12′ battery cable, and power plug with 15′ connecting cable included with kit. Operates from 12 to 14 volt battery source. Shpg. Wt. 8 lbs.

POWER METER KIT

Designed especially for the mobile ham, the PM-2 gives constant indication of your transmitter output. Small and compact, to eliminate interference with the driver's view, it features a strong magnet on a swivel mount which holds it on the car dashboard or other metal surfaces. No holes to drill or mounting brackets to install. Has its own antenna, or may be connected to existing antenna. Features a 200 ua meter with variable sensitivity control. Shpg. Wt. 2 lbs.

MOBILE SPEAKER KIT

Makes an ideal companion speaker for the Heathkit "Comanche" Mobile Receiver. Housed in a rugged steel case with brackets provided for easy installation on firewall or under dashboard, etc. Designed for heavy duty mobile use. Features a 5″ PM speaker with 8 ohm voice coil. Measures 5″ H. x 5″ W. x 2½″ D. Shpg. Wt. 4 lbs.

MOBILE BASE MOUNT KIT

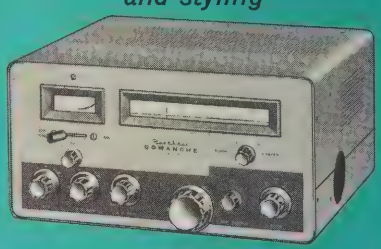
Designed to hold both the "Cheyenne" and "Comanche" Mobile Transmitter and Receiver conveniently at the driver's side, this universal mounting bracket has adjustable legs to fit most automobiles. With transmitter and receiver bolted to it, the entire unit may be removed from the car and set up as a fixed station unit. Shpg. Wt. 5 lbs.

enjoy the fun of a mobile rig

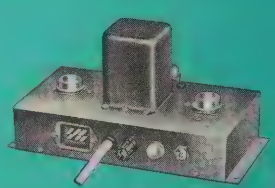


HEATHKIT MT-1 $99.95

tops in quality and styling



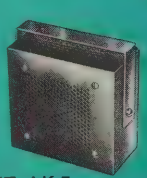
HEATHKIT MR-1 $119.95



HEATHKIT MP-1 $44.95



HEATHKIT PM-2 $12.95



HEATHKIT AK-7 $5.95



HEATHKIT AK-6 $4.95

HAM FACILITIES - OFFER YOU MORE . . . COST LESS!



HEATHKIT TX-1 $234.95

companions of distinction



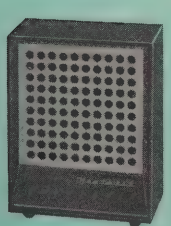
HEATHKIT RX-1 $274.95



HEATHKIT SB-10
$89.95

HEATHKIT XC-6
$26.95





HEATHKIT AK-5
$9.95

HEATHKIT®

"APACHE" HAM TRANSMITTER KIT

Modern and up-to-date in every respect, the "Apache" features 150 watt phone input and 180 watt CW input and operates on 80, 40, 20, 15 and 10 meters. In addition to CW and phone operation, provision is made for single-sideband transmission using the SB-10 External Adapter. The specially designed VFO provides the low drift frequency control necessary for SSB transmission. Featured are adjustable low-level speech clipping and low distortion modulator stage employing two 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button allows tuning before switching on the final amplifier and enables the operator to "zero-beat" an incoming frequency. Shpg. Wt. 110 lbs.

"MOHAWK" HAM RECEIVER KIT

A twin to the "Apache" Transmitter, the "Mohawk" is a 15-tube receiver featuring double conversion with IF's at 1682 kc and 50 kc, covering all amateur frequencies from 160 through 10 meters on seven bands. An extra band is also included, calibrated to cover 6 and 2 meters using a converter. Provision is also made for single-sideband reception with crystal controlled oscillators for upper and lower sideband selection. Featured are five selectivity positions from 5 kc to 500 CPS, bridged T-notch filter for excellent heterodyne rejection and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. A completely pre-assembled, wired and aligned front end coil/-bandswitch assembly assures easy construction and top performance. Each ham band is separately calibrated on an illuminated rotating slide rule dial for precise frequency settings and ample bandspread. Shpg. Wt. 66 lbs.

SINGLE SIDEBAND ADAPTER KIT

A compatible plug-in adapter unit for the TX-1 "Apache" Transmitter, the SB-10 lets you operate on SSB at minimum cost, yet does not affect the normal AM and CW functions of the transmitter. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. Built-in electronic voice control with anti-trip circuit is provided. Shpg. Wt. 12 lbs.
MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. $8.95.

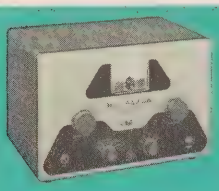
6 METER CONVERTER KIT

Designed for use with the RX-1 "Mohawk" Receiver, the XC-6 extends operation into the 6 meter band. The 3-tube circuit provides two stages of RF amplification and a low-noise triode mixer. Features a crystal controlled oscillator and provision for external RF gain control to prevent overload or cross modulation from extremely strong signals. Shpg. Wt. 6 lbs.

ACCESSORY SPEAKER KIT

Color styled to match the "Mohawk" Receiver, the AK-5 features a heavy duty 8" speaker with 4.7 ounce magnet, providing outstanding tone quality. Housed in attractive ⅜" plywood cabinet with perforated metal grille. Shpg. Wt. 7 lbs.

BUILD YOUR OWN HAM STATION . . . SAVE 50% OR MORE



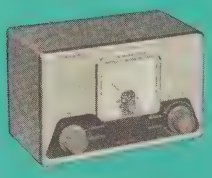
HEATHKIT
DX-40
$64.95

DX-40 PHONE AND CW TRANSMITTER KIT

Providing both phone and CW operation on 80, 40, 20, 15 and 10 meters, the DX-40 represents an outstanding buy in its power class. Modulator and power supplies are built-in and single-knob bandswitching is combined with a pi network output circuit for complete operating convenience. Trap door in back of cabinet provides easy access to crystals. Shpg. Wt. 25 lbs.

USEFUL HAM ACCESSORIES

REFLECTED POWER METER KIT



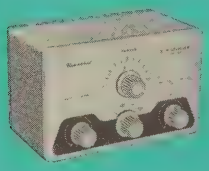
HEATHKIT
AM-2
$15.95
Shpg. Wt. 3 lbs.

BALUN COIL KIT



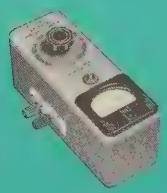
HEATHKIT
B-1
$8.95
Shpg. Wt. 4 lbs.

"Q" MULTIPLIER KIT



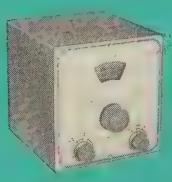
HEATHKIT
QF-1
$9.95
Shpg. Wt. 3 lbs.

ANTENNA IMPEDANCE METER KIT



HEATHKIT
AM-1
$14.50
Shpg. Wt. 3 lbs.

VARIABLE FREQUENCY OSCILLATOR KIT



HEATHKIT
VF-1
$19.50
Shpg. Wt. 7 lbs.

complete 6 and 2 meter facilities

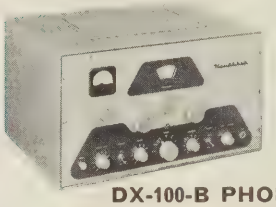


HEATHKIT VHF-1
$159.95

"SENECA" VHF HAM TRANSMITTER KIT

Handsomely styled and ruggedly constructed the "Seneca" is a completely self-contained 6 and 2 meter transmitter of outstanding quality and performance. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings are reduced slightly in the 2 meter band. Included are controlled carrier phone operation, built-in VFO for both 6 and 2 meters, and four switch-selected crystal positions. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. Complete RF shielding. Shpg. Wt. 56 lbs.

a transmitter you'll be proud to own



HEATHKIT DX-100-B $189.50

DX-100-B PHONE and CW TRANSMITTER KIT

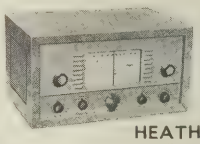
An outstanding performer of highest quality throughout the well-known DX-100-B features a built-in VFO, modulator and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Covers 160 through 10 meters. Single-knob bandswitching and illuminated VFO dial and meter face. RF output stage uses a pair of 6146 tubes in parallel modulated by a pair of 1625's. Designed for easy assembly. Shpg. Wt. 107 lbs.



$35.95
HEATHKIT DX-20

DX-20 CW TRANSMITTER KIT

A top flight, low cost transmitter, the DX-20 covers 80 thru 10 meters and features 50 watt plate power input, pi network output, RF shielding. Shpg. Wt. 19 lbs.



$29.95
HEATHKIT AR-3
(less cabinet)

COMMUNICATIONS-TYPE ALL-BAND RECEIVER KIT

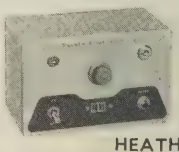
A fine receiver for the beginning ham or short wave listener. Frequency covers from 550 kc to 30 mc in four bands. Easy to build. Shpg. Wt. 12 lbs.



$23.95
HEATHKIT VX-1

VX-1 ELECTRONIC VOICE CONTROL KIT

Lets you switch from receiver to transmitter merely by talking into your microphone. Has receiver, speaker, and 117 V antenna relay connections. Shpg. Wt. 5 lbs.



$13.95
HEATHKIT CA-1

"AUTOMATIC" CONELRAD ALARM KIT

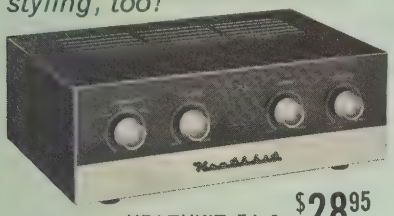
When stations go "off the air" in an emergency the CA-1 automatically cuts AC power to your transmitter. Use with any radio having an AVC circuit. Shpg. Wt. 4 lbs.

ATTENTION ALL DX-100 OWNERS!

Modification kit Model MK-3 now available. This modification replaces the combination fixed and variable pi network output loading capacitor arrangement in the DX-100 with a single variable capacitor to provide smooth, continuous loading on all bands. Shpg. Wt. 1 lbs. $4.95.

HEATHKIT® HI-FI ... FUN TO BUILD ... A PLEASURE TO OWN

hi-fi—low cost and styling, too!

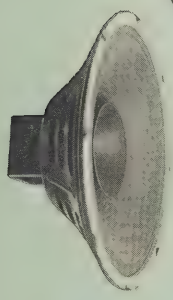


HEATHKIT EA-2 $28.95

utility speakers for a wide variety of uses

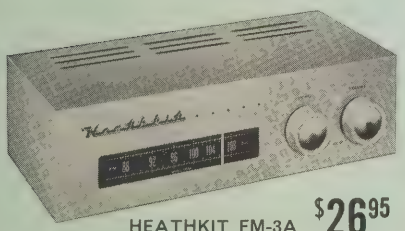
HEATHKIT US-1 $7.50





HEATHKIT US-2 $11.95

low-cost hi-fi entertainment!



HEATHKIT FM-3A $26.95

tops in am performance



HEATHKIT BC-1A $26.95

"BOOKSHELF" HI-FI 12 WATT AMPLIFIER KIT

Convenient and compact, the EA-2 provides you with an amplifier and preamplifier combination of unusual quality. Providing more than adequate power for the average home hi-fi system it features full range frequency response from 20 to 20,000 CPS within ±1 db. Distortion is less than 2% at full 12 watt output over this entire range. Miniature tubes are used throughout, including 6BQ5/EL84 output tubes in a push-pull tapped-screen output circuit. Three separate inputs are provided: tuner, crystal phono, and mag phono with RIAA equalization, separate bass and treble tone controls, and special hum control. Output transformer is tapped for 4, 8, and 16 ohm speakers. The vinyl-clad steel cover has a leather-like texture in black with inlaid gold design for very attractive appearance. A neon lamp is also provided to indicate when the amplifier is on. The only additional equipment required would be a program source and speaker system. An ideal gift for the whole family to enjoy. Shpg. Wt. 15 lbs.

12" UTILITY SPEAKER

Here is a good quality, low cost 12" utility speaker that will find many varied applications in hi-fi or P.A. systems such as piping sound into other rooms, etc. Also useful in replacing inferior TV or radio speakers, or as an auxiliary speaker for testing purposes. The model US-1 will handle up to 12 watts with a frequency response of 50 to 9,000 CPS. Speaker impedance is 8 ohms and a 6.8 ounce magnet is employed. Shpg. Wt. 7 lbs.

12" DUAL-CONE SPEAKER

Another fine speaker of special design the dual-cone model US-2 features extended high frequency response, covering from 50 to 12,000 CPS. Free space resonance is approximately 60 CPS. Magnet weight is 6.8 ounce and speaker impedance is 8 ohms. Ideal for use in wired music systems, paging systems, etc. where a good quality speaker is desired. Instructions are provided with the speaker for construction of a suggested basic enclosure. The model US-2 will handle up to 14 watts program material. Shpg. Wt. 7 lbs.

HIGH FIDELITY FM TUNER KIT

Enjoy the crystal clear reception of FM programming with this handsomely styled tuner. Featuring broad-banded circuits for full fidelity and better than 10 microvolt sensitivity for 20 db of quieting the FM-3A pulls in stations with clarity and full volume. Covers the complete FM band from 88 to 108 mc. Stabilized, temperature-compensated oscillator minimizes drift after initial warmup. A ratio detector provides high efficiency demodulation without sacrificing hi-fi performance. Power supply is built-in and IF and ratio transformers are prealigned as is the front end tuning unit, making special alignment equipment unnecessary. Tuning takes place on an easy-to-read edge-lighted glass slide rule dial. Two outputs are provided. One fixed and one variable with extra stage of amplification. Enjoy your least expensive source of hi-fi entertainment with this high quality FM tuner. Shpg. Wt. 8 lbs.

HIGH FIDELITY AM TUNER KIT

An ideal companion piece to the Heathkit FM-3A, this AM tuner offers you a remarkable value for the low price. Thoughtful circuit layout and circuit design contribute to the overall performance of this fine tuner. It features a special detector using crystal diodes and broad-bandwidth IF circuits for low signal distortion. Audio response is ±1 db from 20 CPS to 9 kc with 5 db of pre-emphasis at 10 kc to compensate for station rolloff. The tuner covers the complete broadcast band from 550 to 1600 kc with outstanding sensitivity and selectivity. Prealigned RF and IF coils eliminate the need for special alignment equipment. Two outputs, two antenna inputs, built-in power supply and AVC are incorporated. Edge-lighted slide-rule dial is employed for easy tuning. Easy-to-build with complete step-by-step instructions. Shpg. Wt. 9 lbs.

HEATHKIT®

HEATHKIT®

FIRST IN QUALITY–VALUE–STYLE . . .

full fidelity AM and FM reception



HEATHKIT PT-1 $89.95

MONAURAL-STEREO AM-FM TUNER KIT

Combining two complete tuners in one attractively styled unit, the 16-tube PT-1 offers you outstanding AM, FM or stereo AM/FM performance. The 10-tube FM circuit features a prewired and prealigned 3-tube front end. The IF strip consists of two printed circuit boards for ease of assembly, and the IF's are prealigned to individual standards. Featured in the FM circuit is AFC and built-in antenna. The specially designed AM circuit features prealigned IF and RF coils. The entire AM circuit is on one printed circuit board for ease of assembly. Variable bandwidth control provides excellent station selectivity. A built-in AM rod antenna is incorporated with provision for an external antenna if desired. Extremely low distortion is assured through the use of a balanced push-pull germanium diode detector. The PT-1 incorporates individual flywheel tuning on AM and FM and the tuning meter also functions on both bands. Shpg. Wt. 24 lbs.

complete stereo control center



HEATHKIT SP-2 $56.95
Shpg. Wt. 15 lbs.

HEATHKIT SP-1 $37.95
Shpg. Wt. 13 lbs.

HEATHKIT C-SP-1 $21.95
Shpg. Wt. 5 lbs.

Converts SP-1 to SP-2

MONAURAL-STEREO (two channel mixer) PREAMPLIFIER KIT

A unique "building block" design allows you to buy this outstanding preamplifier in either monaural or stereo version. The monaural version (SP-1) features six separate inputs with four input level controls. Inputs consist of: tape head, mag phono, mike and three separate high level inputs. Level controls are provided on mag phono and all three high level inputs. Provision for NARTB equalization for tape head input and RIAA, LP or 78 record compensation for mag phono input. Separate "level" and "loudness" controls provide distortion-free listening at any volume. A scratch filter provides for playing worn records. Convert to stereo by merely plugging in the second channel (CSP-1). No rewiring required on existing channel. A remote balance control with 20′ cable allows balancing stereo system from listening position.

true turntable quality . . .



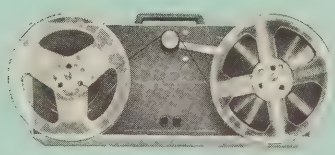
AUTOMATIC HI-FI RECORD CHANGER KIT

Enjoy the convenience of an automatic changer with true turntable quality. This unit obtains the true brilliance from your hi-fi and stereo records while treating them with the care they deserve. Switch selected 33⅓, 45, 78 and 16 RPM speeds. A unique "turntable pause" automatically disengages the turntable drive during the change cycle, eliminating the grinding action caused by records dropping on a moving turntable or disk. Flutter and wow are held to less than 0.18% RMS. An automatic speed selector position allows intermixing 33⅓ and 45 RPM records regardless of sequence. All models include changer base, stylus pressure gauge and 45 RPM spindle.

STEREO MODEL RP-3-S: Equipped with Shure Brothers, Inc., cartridge providing frequency response of ±4 db from 30 to 14,000 CPS. Shpg. Wt. 19 lbs. **$74.95.**

MONAURAL MODEL RP-3-LP (monaural microgroove recordings only): Equipped with MF-1 Diamond Stylus Cartridge (by Fairchild Recording Equipment Corporation). Shpg. Wt. 19 lbs. **$74.95.**

MONAURAL MODEL RP-3: Features a GE VRII cartridge with diamond LP and sapphire 78 stylus. Shpg. Wt. 19 lbs. **$64.95.**



HEATHKIT SW-1 $24.95

SPEEDWINDER KIT

Saves wear and tear on tape and recorder while rewinding tape or 8 and 16 millimeter film at the rate of 1200′ in 40 seconds. Handles up to 10½″ tape reels. Automatic and manual shutoff provided. Shpg. Wt. 12 lbs.



HEATHKIT AK-1 $9.95

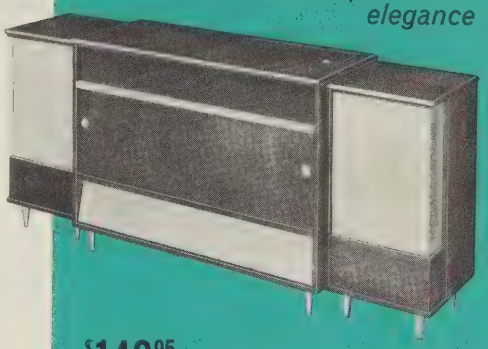
MICROPHONE ACCESSORY KIT

Handy in ham radio work, P.A. or hi-fi applications, this rugged high fidelity crystal mike comes equipped with three holders; a mike stand adapter, a lavalier neckband and desk stand. An 8′ cable with phone plug is included. Shpg. Wt. 1 lb.

STEREO EQUIPMENT KIT

Designed to blend beautifully into your home furnishings, this superbly styled stereo cabinet ensemble holds your complete home stereo hi-fi system. Consisting of a "stereo equipment center" flanked by two individual "stereo wing speaker enclosures", the unit has room for all the components required for stereo sound. Although designed to hold Heathkit stereo components it is not frozen to this arrangement. The kit is supplied with mounting panels pre-cut to accommodate Heathkits, but interchangeable blank panels are also furnished for mounting equipment you may already have. The precut panels accommodate the Heathkit AM/-FM Tuner (PT-1), Stereo Preamplifier (SP-2), and Record Changer (RP-3-S). Adequate space is provided for record storage and a matching pair of Heathkit power amplifiers (from 12 to 70 watts). The stereo wing speaker enclosures are open-backed, cloth-grilled cabinets designed to hold the Heathkit SS-3 or similar speaker enclosures. Cabinets are available in beautifully grained ¾" solid core Philippine mahogany or select birch plywood suitable for the finish of your choice. The matched-grain sliding access door on top pops-up flush when closed. Entire top features a shaped edge. Hardware and trim are brushed brass in gold finish. Rich toned grille cloth is flecked in gold and black. A truly enhancing addition to the home, in both beauty and pleasure.

Stereophonic elegance



$149.95 each
shpg. Wt. 162 lbs.

STEREO EQUIPMENT CABINET KIT
Model SE-1B (birch)
Model SE-1M (mahogany)

$39.95 each
shpg. wt. 42 lbs.

STEREO WING SPEAKER ENCLOSURE KIT
Model SC-1BR (birch—right end)
Model SC-1BL (birch—left end)
Model SC-1MR (mahogany—right end)
Model SC-1ML (mahogany—left end)

HIGH FIDELITY TAPE RECORDER KIT

Enjoy your own home recordings in sparkling clear high fidelity. The TR-1A Tape Deck and preamplifier combination provides top quality monaural recording and playback with fast forward and rewind functions. Provides 7½ and 3¾ IPS tape speeds. Two heads are incorporated—"erase" and combination "record/playback". Flutter and wow are held to less than 0.35%. Frequency response at 7½ IPS is ±2.0 db 50-10,000 CPS, at 3¾ IPS ±2.0 db 50-6,500 CPS. Features include NARTB playback equalization, separate record and playback gain control, cathode follower output and provision for mike or line input. Signal-to-noise ratio is better than 45 db below normal recording level with less than 2% total harmonic distortion. May be used in vertical or horizontal position. (Tape mechanism not sold separately). Shpg. Wt. 24 lbs.

TAPE RECORDER ELECTRONICS KIT: This high quality electronics package may be purchased separately to replace your present tape electronics or used as a second channel tape preamp in stereo applications. Provides playback function for most head types. Adapts to most recording heads by making a few circuit adjustments, using an audio voltmeter and an audio generator as outlined in the manual. Shpg. Wt. 10 lbs. Model TE-1, 39.95



HEATHKIT TR-1A **$99.95**

Includes tape deck, tape recorder electronics, mike and roll of blank tape.

DIAMOND STYLUS HI-FI PICKUP CARTRIDGE

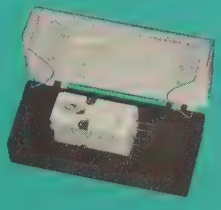
Obtain ultimate fidelity from your monaural microgroove LP records. Designed to Heath specifications by Fairchild Recording Equipment Corporation, the MF-1 features a .7 mill diamond stylus. Nominally flat frequency response from 20 to 20,000 CPS. Shpg. Wt. 1 lb.



HEATHKIT MF-1
$26.95

DIAMOND STYLUS STEREO PICKUP CARTRIDGE

Thrill to the latest stereo records with this superb quality stereo pickup cartridge. Fits all standard tone arms and features a .6 mil diamond stylus. Designed to Heath specifications by Fairchild Recording Equipment Corporation, the SF-1 provides frequency response of ±4 db from 20 to 15,000 CPS. Shpg. Wt. 1 lb.



HEATHKIT SF-1
$39.95

PLAN YOUR HI-FI SYSTEM AROUND VERSATILE

"LEGATO" HIGH FIDELITY SPEAKER SYSTEM KIT

The realism of sound reproduced by the Legato is the result of a skillful blending of precise balance, phasing, driver design and acoustical engineering. The cabinet is a modified infinite baffle using two 15″ Altec Lansing low frequency drivers to cover frequencies from 25 to 500 CPS and a specially designed sectoral exponential horn with high frequency driver to cover frequencies from 500 to 20,000 CPS. Cabinet is of ¾″ veneer-surfaced plywood in either African mahogany or imported white birch. All parts are pre-cut and pre-drilled for easy assembly. Special design crossover network included. Shpg. Wt. 195 lbs.

"BASIC RANGE" HI-FI SPEAKER SYSTEM KIT

A perfect basic speaker system for any home hi-fi enthusiast, the SS-2 employs a Jensen 8″ woofer and compression-type tweeter to provide a total frequency range from 50 to 12,000 CPS. Cabinet is of ½″ veneer-surfaced plywood suitable for the finish of your choice. May be used with the Heathkit SS-1B for additional frequency range. Shpg. Wt. 26 lbs.

ATTRACTIVE BRASS TIP ACCESSORY LEGS: Convert the SS-2 into a handsome consolette. 14″ legs screw into brackets provided. Shpg. Wt. 3 lbs. No. 91-26. $4.95.

BASIC FIR MODEL SPEAKER SYSTEM: Same as SS-2 except constructed of non-premium ½″ veneer plywood without trim or grille cloth. Shpg. Wt. 26 lbs. Model SS-3. $34.95.

"RANGE EXTENDING" HI-FI SPEAKER SYSTEM KIT

Not a complete speaker system in itself, the SS-1B is designed to extend the range of the basic SS-2 (or SS-1) Speaker System and provide you with a truly magnificent speaker combination. The unit employs a 15″ woofer and a small super tweeter to extend the SS-2/SS-1B combination to an overall response of ±5 db from 35 to 16,000 CPS. Crossovers are at 600, 1600 and 4000 CPS. Impedance is 16 ohms, power rating 35 watts. The handsome cabinet measures 29″ H. x 23″ W. x 17½″ D. Constructed of ¾″ veneer-surfaced plywood suitable for light or dark finish of your choice. All hardware included. Shpg. Wt. 80 lbs.

CHAIRSIDE ENCLOSURE KIT

Handsomely styled to complement your home furnishings, the CE-2 places your entire hi-fi system right at your chairside. Cabinet is constructed of beautifully grained veneer-surfaced plywood suitable for the finish of your choice. Space is provided for the Heathkit AM and FM tuners (BC-1A and FM-3A), the WA-P2 preamplifier, the RP-3 record changer and any of the amplifiers designed to operate with the WA-P2. All parts are precut and predrilled for easy assembly. Enclosure measures 18″ W. x 24″ H. x 35½″ D. Changer compartment measures 17¾″ W. x 16″ H. x 9⅝″ D. Shpg. Wt. 46 lbs.

"MASTER CONTROL" HI-FI PREAMPLIFIER KIT

An excellent control center for your hi-fi system, the WA-P2 provides five switch-selected inputs with individual level controls. Frequency response is within ±1½ db from 15 to 35,000 CPS. Separate turnover and rolloff switches provide equalization for LP, RIAA, AES and early 78 records. Separate bass and treble tone controls and volume control. Use with any of the basic Heathkit amplifiers. Shpg. Wt. 7 lbs.

ELECTRONIC CROSSOVER KIT

This versatile unit separates high and low frequencies electronically and feeds them to separate power amplifiers. Virtually eliminates IM distortion and speaker matching problems. Crossover frequencies for each channel are 100, 200, 400, 700, 1200, 2000 and 3500 CPS. Ideal for use in designing your own speaker system. Shpg. Wt. 6 lbs.



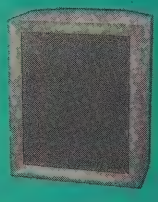
MODEL HH-1-B
(Imported white birch)
MODEL HH-1-M
(African mahogany)
$299.95 each



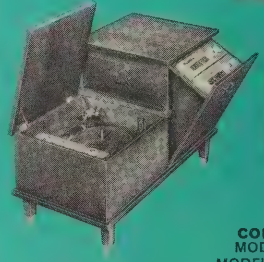
MODEL SS-2
$39.95
(optional legs extra)

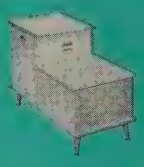


MODEL SS-3
$34.95



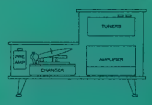
MODEL SS-1B
$99.95

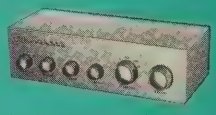




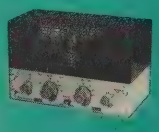
CONTEMPORARY
MODEL CE-2-B Birch
MODEL CE-2-M Mahogany

TRADITIONAL
MODEL CE-2-T Mahogany
$43.95 each





HEATHKIT WA-P2
$19.75



HEATHKIT XO-1
$18.95

HEATHKIT® COMPONENTS

"EXTRA PERFORMANCE" HI-FI 55 WATT AMPLIFIER KIT

At less than a dollar per watt you can own the latest advancement in the Heathkit line of high fidelity amplifiers. Featuring the famous Heathkit "bas-bal" balance circuit, the power output of the W-7M at maximum damping is conservatively rated at 55 watts from 20 to 20,000 CPS with less than 2% total harmonic distortion throughout this entire range at full output. Switch control provides maximum or unity damping for 4, 8 or 16 ohm speakers. A special 70 volt line output is also provided. Power supply features silicon diode rectifiers for excellent regulation and long life. Shpg. Wt. 28 lbs.

HIGH FIDELITY 70 WATT AMPLIFIER KIT

This power-packed performer loafs through undistorted power demanding tasks of hi-fi systems or P.A. networks where other amplifiers give their all. Silicon diode rectifiers assure long life and the heavy duty transformer provides good power supply regulation. Quick change plug selects 4, 8 and 16 ohm or 70 volt output and the correct feedback resistance. Continuously variable damping, 0.5 to 10. Frequency response at 1 watt is ±1 db, 5 CPS to 80 kc with controlled HF rolloff above 100 kc. At 70 watts output, harmonic distortion is below 2%, 20 to 20,000 CPS and IM distortion below 1%, 60 and 6,000 CPS. Hum and noise 88 db below full output. Shpg. Wt. 52 lbs.

HIGH FIDELITY 25 WATT AMPLIFIER KIT

Time proven for dependability the W-5M offers you a tremendous dollar value. A specially designed Peerless output transformer and KT66 tubes operate in a circuit rated at 25 watts which will follow instantaneous power peaks up to 42 watts. Frequency response is ±1 db from 5 to 160,000 CPS at 1 watt and within ±1 db from 20 to 20,000 CPS at full 25 watt output. Harmonic distortion is less than 1% at 25 watts and IM distortion is 1% at 20 watts (60 and 3,000 CPS; 4:1). Hum and noise are 99 db below 25 watts for truly quiet performance. Shpg. Wt. 31 lbs.

UNIVERSAL HI-FI 12 WATT AMPLIFIER KIT

Two UA-1's make an ideal stereo pair or your present hi-fi system can be converted to stereo by adding a UA-1. Except for lower power output it offers the same hi-fi performance as the famous Heathkit Williamson-type amplifiers. 6BQ5/EL84 push-pull output tubes are used and harmonic distortion is less than 2% throughout the audio range (20 to 20,000 CPS) at full 12 watt output. "On-off" switch located right on the chassis and an octal socket is provided for remote control operation. Taps provided for 4, 8 or 16 ohm speakers. The 16-ohm tap features switch damping for unity or maximum. An input level control allows use in wired music systems where a preamplifier is not required. Shpg. Wt. 13 lbs.

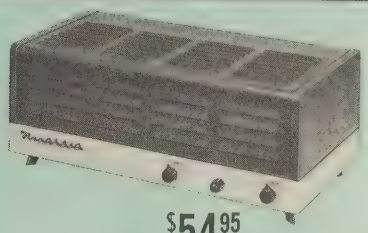
SINGLE CHASSIS HI-FI 20 WATT AMPLIFIER KIT

Featuring the famous Williamson amplifier circuit with 5881 push-pull output tubes and a specially designed Chicago Standard output transformer, the W4-AM provides you with a full fidelity amplifier. Extended frequency response (10 to 100 kc ±1 db at 1 watt), low distortion and low hum level. Harmonic distortion is held to 1.5% and IM distortion below 2.7% at full 20 watt output. Shpg. Wt. 28 lbs.

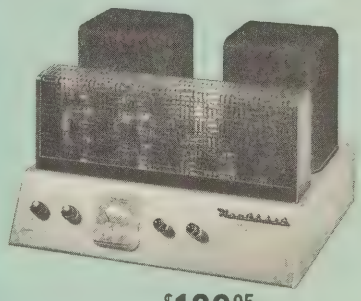
DUAL CHASSIS HI-FI 20 WATT AMPLIFIER KIT

The Williamson-type circuit featured in the W3-AM features the famous Acro-sound TO-300 "ultralinear" output transformer and 5881 tubes for broad frequency response, low distortion, and low hum level. Harmonic distortion is held to less than 1% and IM distortion is less than 1.2% at full 20 watt output. Frequency response is 20 to 80 kc ±1 db at 1 watt. Shpg. Wt. 29 lbs.

HEATHKIT®



HEATHKIT W-7M $54.95



HEATHKIT W-6M $109.95

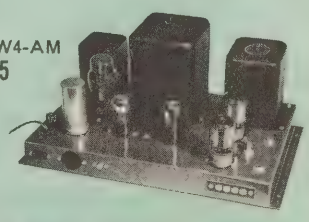


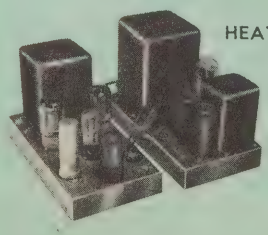
HEATHKIT W-5M $59.75



HEATHKIT UA-1 $21.95

HEATHKIT W4-AM $39.75





HEATHKIT W3-AM $49.75

DO-IT-YOURSELF MARINE ACCESSORIES





plot your position instantly

HEATHKIT DF-2 $69.95

2-BAND TRANSISTOR RADIO DIRECTION FINDER KIT

Six transistors powered by six standard flashlight batteries operate this completely portable radio direction finder. Covering the marine beacon band from 200 to 400 kc and standard broadcast band from 540 to 1620 kc, the DF-2 takes directional "fixes" on aircraft and marine beacons as well as standard broadcast transmitters, while providing the entertainment of a high quality transistor portable radio. Aircraft weather reports are available every thirty minutes along with constant Coast Guard beacons on the 200 to 400 kc band. The flashlight batteries used for power will last up to one year under normal operation. Shpg. Wt. 9 lbs.



home convenience afloat

HEATHKIT MC-1 $39.95

MARINE CONVERTER KIT

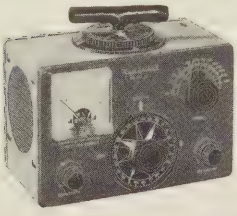
Keep your marine batteries fully charged at all times. Plugged into shore current, the MC-1 provides up to 20 amperes continuously for charging 6 volt storage batteries or up to 10 amperes continuously for charging 12 volt batteries. Utilizes a silicon diode rectifier for efficiency and long life. No moving parts, tubes nor blowers to wear out or break. Shpg. Wt. 16 lbs.



HEATHKIT PC-1 $24.95

12 VOLT POWER CONVERTER KIT

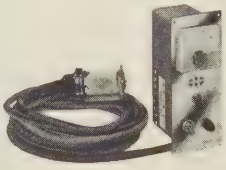
Operate your TV set, radio, electric razor, lights, etc., directly from your 12-volt marine or car battery. Power rating is 125 watts continuously or 175 to 200 watts intermittent. May also be used in powering test instruments such as the Heathkit IA-1 Ignition Analyzer. Not recommended for record players, tape decks, power tools or radio transmitters. Shpg. Wt. 8 lbs.



HEATHKIT DF-1 $54.95

TRANSISTOR RADIO DIRECTION FINDER KIT

A self-contained, six transistor receiver operating on the standard broadcast band (540 to 1600 kc) the DF-1 takes directional "fixes" on broadcast transmitters while providing you with portable radio entertainment. Shpg. Wt. 5 lbs.



HEATHKIT FD-1-6 (6 volt)
HEATHKIT FD-1-12 (12 volt)
$35.95 each

FUEL VAPOR DETECTOR KIT

Guard against dangerous bilge fumes with this highly sensitive instrument. Warns you at a glance of the presence of fumes in your bilge on a three-color "safe-dangerous" meter. Pilot light shows if detector is operating. Kit is complete including neoprene-insulated cable and a spare detector unit. Shpg. Wt. 4 lbs.



HEATHKIT TI-1 $25.95

ELECTRONIC TACHOMETER KIT

Operating directly from the spark impulse of an engine, the TI-1 may be used on any spark-ignited two or four cycle engine with any number of cylinders. Operates on 6, 8, 12, 24 or 32 volt DC system and is completely transistorized. Reads RPM from 500 to 6,000. Shpg. Wt. 4 lbs.



HEATHKIT PM-1 $14.95

POWER METER KIT

Samples the RF field of marine mobile or fixed transmitters. Operates on any transmitter having output frequency between 100 kc and 250 mc regardless of power. Requires no batteries, electricity, nor direct connection to the transmitter. A simple and inexpensive way to check transmitter efficiency at all times. Shpg. Wt. 2 lbs.



HEATHKIT CI-1 $16.95

MARINE BATTERY CHARGE INDICATOR KIT

See at a glance the exact percentage of charge in your boat batteries. Checks from one to eight storage batteries instantly. Operates on 6, 8, 12 or 32 volt systems. Note: For mounting on nonferrous metals or wood only. Shpg. Wt. 3 lbs.



HEATHKIT RI-1 $14.95

RUDDER POSITION INDICATOR KIT

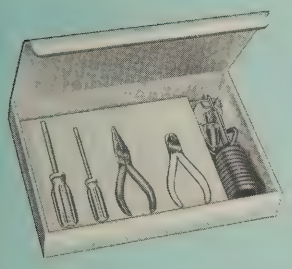
Operates on your 6 or 12 volt marine battery and shows at a glance the exact position of your rudder at all times. Receiver calibrated 60 degrees port and starboard from dead ahead. Includes 20′ of cable and all necessary mechanical linkage. Shpg. Wt. 4 lbs.

SHOP DIRECT BY MAIL OR AT YOUR LOCAL DEALER

BUILD THE WORLD'S FINEST ELECTRONIC INSTRUMENTS IN KIT FORM

Go to your nearest Heathkit dealer or order direct from the factory. You save ½ or more over equivalent ready-made products by doing the easy assembly yourself . . . yet enjoy the same high quality, performance and dependability.

inexpensive tools for kit building fun



HEATHKIT TK-1 $9.95

COMPLETE TOOL SET

These simple tools show you just how easy Heathkit building really is. The pliers, diagonal sidecutters, two screwdrivers and soldering iron are all the basic tools you need for building practically any Heathkit. The pliers and sidecutters are equipped with insulated rubber handles. The American Beauty soldering iron has a replaceable tip to facilitate cleaning. All the tools are of top quality case hardened steel for rugged duty and long life. The manual included with this handy kit provides you with many useful tips on the use and care of tools. It shows you exactly how to make a proper solder connection and tells you how to keep your soldering iron clean and in top operating condition at all times. The manual further shows the right and wrong methods of employing your other tools. A truly worthwhile investment for the beginner in electronic kit building. Shpg. Wt. 3 lbs.

HEATHKIT®

Convenient "over-the-counter" delivery is now available through any of the Authorized Heathkit Dealers listed below. Although you will find the price of Heathkits slightly higher when buying locally, we're sure you'll agree that this increase is justified. Your dealer absorbs all transportation charges, carries a complete stock of kits for immediate delivery, provides demonstration facilities, offers you a reliable source for parts and fast service . . . and stands ready to counsel or advise you on any problem that might arise.

This new service does not affect your continued privilege to buy directly from Heath Company if you prefer.

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182 East Main Street

FRESNO
Dunlap Radio & TV
2617 Tulare Street

LONG BEACH
Kierulff & Company
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Kierulff Sound Corporation
12024 Wilshire Boulevard

LOS ANGELES
Kierulff Sound Corp. (Capkit)
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LOS ANGELES
Kierulff & Company
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Careful selection of reliable qualified dealers is a slow process . . . so please bear with us if your area has not been covered. Thank you.

ENJOY YEAR ROUND PORTABLE ENTERTAINMENT

6 TRANSISTOR PORTABLE RADIO KIT

This outstanding transistor portable is easy to build and offers fun and enjoyment wherever you go. High quality components are used throughout and high performance is assured through use of six name-brand (Texas Instrument) transistors for extra good sensitivity and selectivity. The 4″ x 6″ PM speaker with heavy magnet provides "big set" tone quality. It is powered by six standard size "D" flashlight cells which provide extremely long battery life (between 500 and 1000 hours) and they can be purchased almost anywhere. Use of this large speaker and roomy chassis make it unnecessary to crowd components adding greatly to the ease of construction. Transformers also are prealigned so it is ready for operation as soon as construction is completed. Peak performance is easily accomplished with a slight touch-up in alignment using a radio station as reference. Receiver has built-in rod-type antenna for reception in all locations. The modern molded plastic case with pull-out carrying handle and fully enclosed back add beauty and convenience to this splendid kit. Cabinet is two-tone blue molded plastic with gold inlay and measures 9″ L. x 7″ H. x 3¾″ D. Shpg. Wt. 6 lbs.

MODEL XR-1-L: Identical to the XR-1-P except supplied with leather case instead of plastic case. Leather carrying strap included. Shpg. Wt. 7 lbs.

LEATHER CASE: Can be purchased separately if desired. Fits all XR-1-P's and earlier XR-1 models. No. 93-1. Shpg. Wt. 3 lbs. $6.95



MODEL XR-1-L
$34.95

MODEL XR-1-P $29.95

FORM 3547 REQUESTED

All prices quoted are Net F.O.B. Benton Harbor, Michigan, and apply to Continental U.S. and Possessions only!
Prices herein effective March 1, 1959.
All prices and specifications subject to change without notice.

BUILDING YOUR OWN HEATHKIT IS FUN!

You'll find the instructions easy to follow and each step thoroughly illustrated with large pictorial diagrams showing where each part goes.

The pride of personal accomplishment you experience is something that money cannot buy . . . you not only save 50% or more over ready built equipment of comparable quality but enjoy the same fine performance, quality and dependability.

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Volume 224 Spring 1991

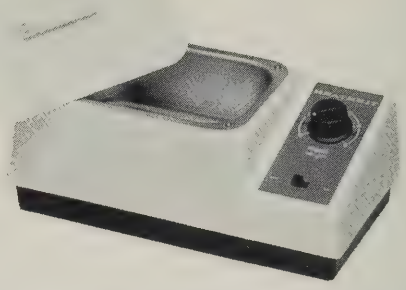


SAVE 75%

Plant soil moisture probe tells when your house plants need water

SKILL LEVEL 1 Here's a fun first kit that gives you the chance to show off your green thumb. This moisture probe indicates when your house plants are thirsty. A quick-blinking LED tells you the moisture level is fine. When the LED blinks slowly, you'll know it's time to get out the watering can.

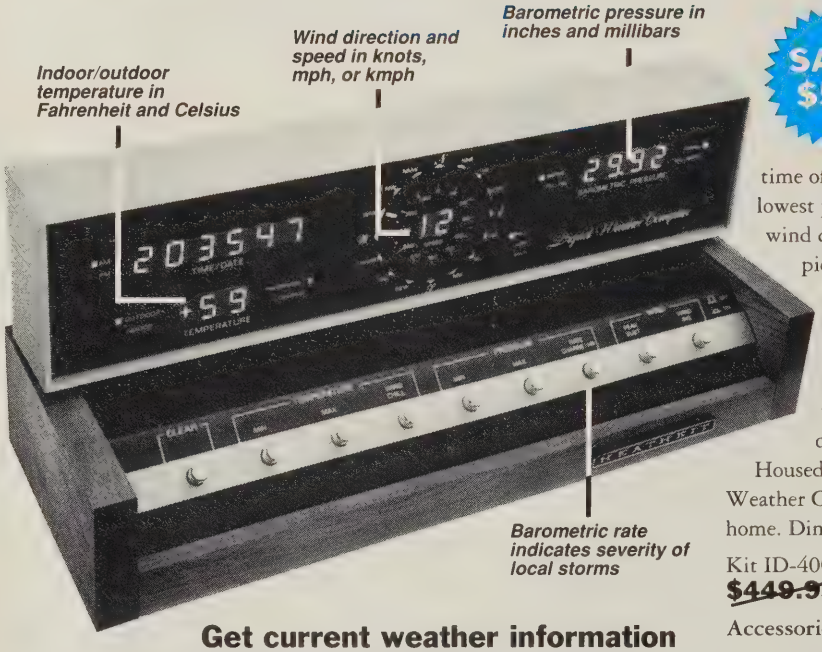
Kit SK-2 (1 lb.)
~~$11.95~~ **NOW $2.95**



Heath's non-abrasive jewelry cleaner uses sound waves to gently cleanse delicate items

SKILL LEVEL 1 Now you can use the same ultrasonic method popular with professional artisans, jewelers and coin collectors to clean and sanitize precious, delicate items. The Heathkit Ultrasonic Cleaner literally vibrates dirt, stains and undissolved solids from hard-to-clean jewelry, watch parts, glass, coins, dentures and more. All delicate items, except pearls and turquoise, are safely cleaned without abrasion. Uses ordinary laundry soap or softener for most cleaning jobs. Plugs into standard 120 VAC household outlet. 6" L x 4" W x 2 3/8" D.

Kit GD-1151-H (4 lbs.) **$99.95**



SAVE $50!

Get current weather information with the Digital Weather Computer

SKILL LEVEL 2 The Heathkit Digital Weather Computer is an indispensable addition to your home or business–anywhere you'd like to know exact weather conditions. You'll use it daily to find out conditions right where you live. The up-to-the-moment weather information it provides is essential for the outdoor enthusiast, pilot, farmer, resort owner and others.

Microprocessor-controlled memory stores the high temperature for the day along with its time of occurrence, the low temperature and its time of occurrence, and the time and pressure of the highest or lowest pressure since the unit was last cleared. You can also check wind direction and barometer readings to determine the weather picture for the near future. With all this information at your fingertips, you can plan your outdoor activities with confidence.

This useful instrument features both a remote windcup and weathervane transmitter with solid-state infrared sensors which mount to a compact boom assembly. And optical encoding technology means unsurpassed accuracy and reliability.

Housed in an attractive cabinet with solid walnut trim, the Digital Weather Computer is handsome enough to display anywhere in your home. Dimensions are 7 1/4" H x 16" W x 6" D.

Kit ID-4001 Requires one of the cables listed below (15 lbs.)
~~$449.95~~ **NOW $399.95**

Accessories:

50' Cable IDA-1290-1 (2 lbs.) **$12.95**

100' Cable IDA-1290-2 (4 lbs.) **$22.95**

150' Cable IDA-1290-3 (6 lbs.) **$32.95**

Specifications: **Time and Accuracy:** Determined by accuracy of AC line. No accumulative error. **Wind Vector:** Accuracy: ±5% or better. **Direction Display:** Accuracy: ±11.25°. **Thermometer:** Temperature Range: -40° C to +70° C (-40° F to +158° F). Accuracy: ±1° on Celsius readings; ±2° on Fahrenheit readings. **Barometer:** Pressure Range: 28.00 to 32.00 in. Hg (inches of mercury), 948 to 1083 millibars. **Basic Accuracy:** ±0.25% plus ±0.033%/°C. **Operating Temperature:** Outdoor assemblies, -40° C to +70° C (-40° F to +158° F). **Power requirements:** 120/240 VAC. Provision for external battery connection for memory backup during power failures.



Experience the thrill of movie theater sound at home with the surround sound decoder

SKILL LEVEL 2 You too can afford theater quality sound at home with our kit Dolby Surround Sound processor. Unlike other decoders in this price range, this unit provides six outputs of audio information.

The Heath AD-2550 includes left front, center, right front, subwoofer and two surround outputs to place you in the center of the action. Our kit surround processor also has two stereo inputs, allowing you to connect your favorite audio source.

With a push of a button you can select between three different surround modes. There's Dolby Surround for listening to Dolby Stereo-encoded programs, Music Surround for reproducing the depth lost in conventional 2-channel stereo playback, and Mono Enhance for synthesized stereo and surround effects. Plus, we've designed the unit with separate controls for audio time delay, null, surround volume and master volume.

You won't need a separate amplifier to drive your surround channels, because this unit has its own 20-watt built-in amp. We recommend your surround sound speakers have an 8-16 ohm impedance and a power handling rating of at least 20 watts.

Other features include one-step adjustment, automatic Dolby B noise reduction, and an all-metal cabinet for reliability and durability. Dimensions are 2 3/4" H x 17" W x 8 1/2" D.

Kit AD-2550 (12 lbs.) **$199.95**

Specifications: **Separation:** Front Center to Surround: 70 dB at 400 Hz referenced to 1 kHz Consumer Test Tape. **Output Power:** 20 watts total RMS power into 8 ohms. 25 watts into 4 ohms. **Frequency Response:** Front Channels: ±.5 dB, 18Hz-40kHz. Surround Channels: ±.5 dB of Dolby Surround Specification. **Total Harmonic Distortion:** Front Channels: .05% 20Hz-20kHz. Surround Channel: .38% max. across full range. **Output Noise, A-Weighted:** Front Channels: –85 dB at 1V RMS, –95 dB from peak level. Surround Channel: –65 dB at 1 watt/8 ohms, –80 dB from peak level. Input Level: .1 to 2.8 VRMS. Output Level: 4 VRMS. Input Balance Range: 6.7 dB of correction. Input Impedance: 47k ohms. Output Impedance: 2.5k ohms max.



Stereo inputs allow direct connection of any audio source

Six separate outputs deliver dynamic surround sound

Built-in 20 watt amp drives surround sound speakers

An all-metal chassis provides shielding and noise rejection

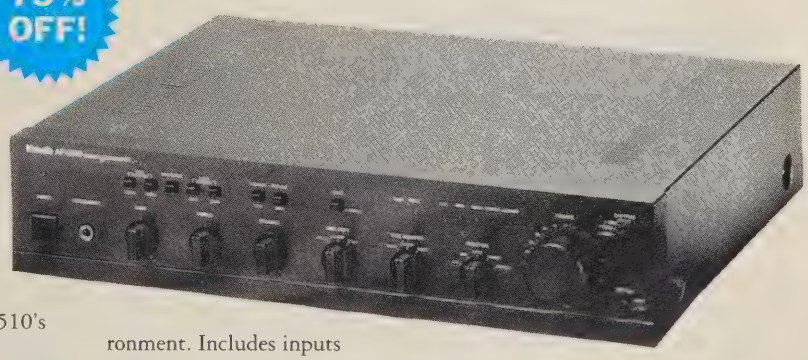
Get control over your audio signal with a Heath preamplifier

75% OFF!

Designed for Heath by Harmon Kardon*, the APW-2510 Preamplifier virtually eliminates distortion with ultra-wideband frequency response and low negative feedback. These qualities help deliver an extremely fast transient response–a necessity for the accurate reproduction of digital recordings.

Transient response is also improved in the phono section, thanks to the use of dual RIAA equalization circuitry. This type of circuitry requires only low levels of negative feedback throughout the audio range. If you prefer a moving coil (MC) cartridge on your turntable, there's no need to worry. The APW-2510's MC head amplifier allows the use of nearly all MC cartridges. In addition, the APW-2510 features capacitance trim for the widest, flattest frequency response from moving magnet (MM) phono cartridges.

Other features include low-noise discrete component circuitry, subsonic and high-cut filters, and a tape copy selector for dubbing between two tape decks or recording from another input. You'll also enjoy tone defeat, which maximizes the purity of the signal when tone controls aren't necessary, and switchable bass and treble turnover frequencies, which let you to custom-tailor the tone controls to your listening environment. Includes inputs for two tape decks, two turntables, a CD player, and a video sound source. 4" H x 17-1/2" W x 14" D.



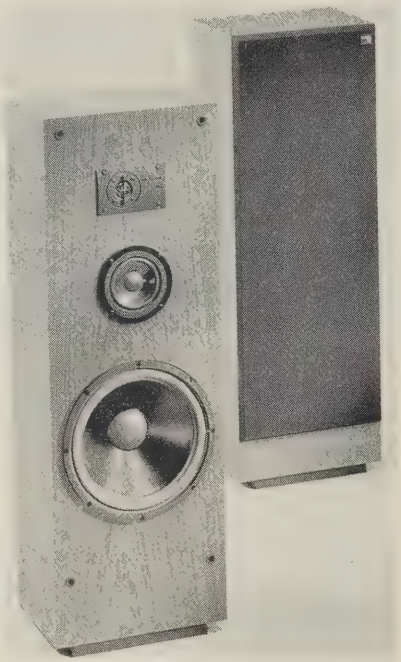
Assembled APW-2510 (16 lbs.) ~~$399.00~~ **NOW $99.95**

Specifications: **Frequency Response:** 0.1 Hz–180 kHz. **THD:** 0.006%. **S/N:** 83 dB phono (MM), 80 dB phono (MC), 92 dB aux, 92 dB tape. **Input Sensitivity/Impedance:** 2.2 mV/47 kΩ 130 pF phono (MM), 130 μV/56 Ω phono (MC), 130 mV/22 kΩ aux, 130 mV/22 kΩ tape. **Output Level:** IV rated 10 V max. **Filters:** 15 Hz subsonic (6 dB/octave), 6 kHz high-cut (6 dB/octave). **Power Supply:** 120 VAC, 60 Hz. **Power Consumption:** 45 W.

* Harmon Kardon is a registered trademark of Harmon Kardon, Inc.

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570

Save on 3-way floor-standing speaker system



The Heath/JBL* 3-way floor-standing speaker system combines quality electronics and fine cabinetry for a pleasurable listening experience.

You'll enjoy accurate stereo imaging from the three vertically aligned drivers — a 12" Aquaplas laminate low-frequency transducer, a high-polymer laminate mid-frequency transducer, and a 1" pure titanium diaphragm high-frequency transducer. Together these drivers ensure a clean, flat frequency response. In addition, the speaker system is ported to extend the low-frequency response and allow it to operate with negligible distortion for startling realism. Constructed of real walnut veneer, the ASW-1230 loudspeakers look good with or without their grills because of a finished facing board. 40" H x 14" W x 10-1/2" D.

SOLD OUT

Assembled ASW-1230 (58 lbs.)
each ~~$399.00~~ ***each*** **NOW $199.50**

Specifications: Configuration: 3-way ported enclosure. **Recommended Amplifier Power Range:** 10–200 watts. **Sensitivity:** 91 dB. **Frequency Response:** 60 Hz–20 kHz (-3 dB). **Frequency Range:** 45 Hz–23 kHz (-10 dB). **Woofer:** 12" Aquaplas laminate low-frequency transducer. **Midrange:** 5" high-polymer laminate mid-frequency transducer. **Tweeter:** 1" pure titanium diaphragm high-frequency transducer. **Impedance:** 8 Ω. **Crossover:** 800 Hz, 4 kHz.
* JBL is a registered trademark of JBL, Inc.



Noise generator kit

SKILL LEVEL 1 To properly check out any stereo or sound system with a spectrum analyzer, you need a noise source with a nearly constant energy output. This easy-to-build Pink/White Noise Generator will do just that...and at a fraction of the cost of comparable noise generators.

Kit AD-1309 (2 lbs.) **$39.95 Limited Quantities!**

Specifications: Frequency Response: Pink Noise, ±1 dB from 20 Hz to 20 kHz. White Noise, ±3 dB from 20 Hz to 20 kHz. Output Levels: >350mV RMS, >1.5 V peak. Power: 9V battery (not included). Dimensions: 2 5/8" H x 4 1/8" W x 4 1/8" D.

68% OFF!

High-performance 2-way speaker system

Enclosed in an attractive walnut vinyl veneer cabinet, the Heath/JBL* 2-way speaker system offers you compact performance. The ASW-1082 delivers exacting sound reproduction from a 1" pure titanium diaphragm high-frequency transducer and an 8" high-polymer low-frequency transducer. In addition, precise circuitry, including low-loss capacitors, provides maximum performance. Dimensions are 23" H x 13" W x 9" D.

Assembled ASW-1082 (29 lbs.)
each ~~$159.98~~ ***each*** **NOW $49.95**



Specifications: Configuration: 2-way ported enclosure. **Recommended Amplifier Power Range:** 10–100 watts. **Sensitivity:** 90 dB. **Frequency Response:** 80 Hz–20 kHz (-3 dB). **Frequency Range:** 50 Hz–23 kHz (-10 dB). **Woofer:** 8" high-polymer low-frequency transducer. **Tweeter:** 1" pure titanium diaphragm high-frequency transducer. **Impedance:** 8 Ω. **Crossover:** 3 kHz.
* JBL is a registered trademark of JBL, Inc.



Audio spectrum analyzer

SKILL LEVEL 3 Use this microprocessor-controlled, 1/2-octave, 20-band spectrum analyzer to check any audio system. You'll see for yourself where you can make improvements in your sound system with the least financial investment. The bright fluourescent display shows which frequencies are underpowered. A fine professional-quality audio tool for the hobbyist.

Kit AD-1308-A (5 lbs.) **$249.95 Limited Quantities!**

Specifications: SPL Ranges: 23 dB–126 dB. **SPL Accuracy:** ±1 dB "A" weighted. **Input Sensitivity (90 dB SPL Range):** 0 dB = 350 mV RMS ±10%, 9-position attenuator 10 dB/step. **Microphone Self Noise Level:** 36 dB SPL "A" weighted (pink noise source). **Corrected Microphone Frequency Response:** ±2 dB on Analyzer display (with pink noise and anechoic environment). **Flatness on Direct Input:** ±1 dB. **Filter Center Frequency Accuracy:** ±8%. **Power:** 6 "C" batteries (not included). Dimensions: 4-1/2" H x 9-1/4" W x 4" D.



Simulated TV picture

Easy-to-build 9" color television

SKILL LEVEL 2 The GR-9009 9" diagonal color television is designed to go anywhere you go. It operates wherever there's normal house current (AC) or from a 12-volt DC (negative ground) lighter socket in automobile electrical systems.

This easy-to-carry portable with all its advanced features provides you with excellent performance wherever you take it. The chromacolor contrast picture tube features reflection-absorbing glass for exceptional contrast and color fidelity. You get bright, true-to-life colors with its black matrix and tinted phosphors. Plus, the in-line electron gun produces remarkable picture detail and dramatically improved edge and corner sharpness. Quartz-controlled electronic tuning has 70 channel capability and makes channel selection convenient and exact–with no moving parts to wear out or cause picture problems. Once adjusted, the TV maintains accurate color, tint and contrast with the push-to-control color system.

SOLD OUT

The GR-9009 portable is as easy to operate. Programmable up/down channel scanning lets you scan your favorite channels or all available channels. Or make instant channel changes simply by pressing *Enter* after you've selected the channel number.

Most circuit boards are preassembled to make building easier. And the GR-9009's built-in cross-hatch generator lets you adjust the set for optimum color alignment. Includes sun screen, earphone, built-in whip antenna, DC power cord and flush-mounted carrying handle. Dimensions are 10 1/4" H x 10 1/2" W x 11 7/8" D.

Kit GR-9009 (25 lbs.) ~~**$269.95**~~ **NOW $249.95**



Stereo headphones

67% OFF!

Using technologically advanced titanium elements, these headphones reproduce every detail of digital recordings. In addition, tuning each channel to perfection is made easy with the unique in-line volume/balance control. Other features include a full-length coiled cord and 1/4" stereo plug. Frequency response is 20 Hz–20 kHz.

Assembled TE-200 (2 lbs.) ~~**$59.95**~~ **NOW $19.95**



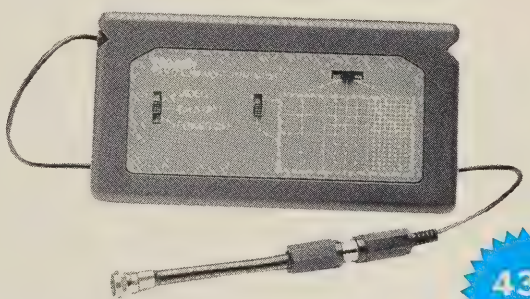
Audio frequency signal generator

SKILL LEVEL 1 Use this generator's sine and square wave outputs as a signal source for harmonic distortion measurement, as an external modulator for RF generators or in testing audio amplifiers for gain or frequency response. You can also use the square wave output to trigger digital instruments. Sine and square wave levels are independently adjustable from 0-3 volts, although frequencies 10Hz-100KHz are identical.

Housed in a 5280 series instrument cabinet, the Audio Generator is stackable with other instruments in the 5280 line. Cabinet includes convenient storage compartment.

Kit IG-5282 (5 lbs.) **$79.95 Limited Quantities!**

Specifications: Frequency Output: 10 Hz to 100 kHz in four ranges. Sine Wave Voltage: 0 to 3 volts RMS. Square Wave Voltage: 0 to 3 volts peak. Power: Two 9V transistor batteries (not included) and/or IPA-5280-1 Power Supply (page 11). Dimensions: 11" H x 5 3/4" W x 7 3/4" D.



43% OFF!

Video alignment generator goes where you need it

SKILL LEVEL 2 Whether you're a hobbyist wanting to fine-tune your own color TV picture or a service technician needing an alignment tool for the shop, our 5260 will certainly do the job.

You have a choice of six patterns–three crosshatch and three dot–for color convergence alignment and picture width, vertical linearity and height adjustments. And, battery operation gives you full portability. Includes modulated RF output for color convergence alignment of TV receivers and composite video output for color convergence alignment of monitors.

Kit IG-5260 (2 lbs.) ~~**$69.95**~~ **NOW $39.95**

Assembled SG-5260 (2 lbs.) ~~**$89.95**~~ **NOW $49.95**

Specifications: Display: Crosshatch and dots: 1 x 1, 7 x 11, 15 x 21 matrices. RF Carrier: Channel 3, 61.250 MHz ±.005%, crystal controlled. RF Output: 3000 µV minimum into 75 ohms. (Phono plug to type F adapter supplied). Video Output: 0.8 V peak-to-peak minimum into 75 ohms (available at phono plug). Power Requirements: 9V battery, not included. Dimensions: 1 1/8" H x 6 1/4" W x 3 1/4" D.

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HS-2862 12 MHz laptop computer. Weighs less than 15 lbs.

After just one short evening of kit building, you'll have a powerful laptop computer that outperforms most desktop PCs.

Knowing how to use a Phillips screwdriver is all it takes to assemble our 286 laptop computer.

SYSTEM SPECIALS
Save 25 - 50% on all systems and accessories below.
Call 1-800-253-0570.

Powerful kit 286 laptop computer features crisp Page White VGA display

SKILL LEVEL 1 With all the power of a desktop PC, the HS-2862 makes the perfect traveling companion. In fact, it offers enough power to double as both your laptop on the road and your desktop in the office.

Combining full PC compatibility and AT computing power, the HS-2862 comes packed with 1MB of standard RAM, enough for those long spreadsheets and databases. And the 640 x 480 Page White VGA display is easy on your eyes. The HS-2862 is brilliant engineering in a surprisingly small package.

Kit HS-2862-A includes kit HS-2862 Laptop, 4.0 A/hr. battery, HA-2862-2 20MB Hard Drive, MS-DOS, Diagnostix, and Lap-Link software. (29 lbs.) **$2399.00**

Kit HS-2862-B includes kit HS-2862 Laptop, HA-2862-4 40MB Hard Drive, MS-DOS, Diagnostix, and Lap-Link software. (29 lbs.) **$2549.00**

Accessories:

1MB RAM Expansion Card configurable for EMS or extended memory.
Assembled ZA-180-95 (1 lb.) **$399.00**

2MB RAM Expansion Card configurable for EMS or extended memory.
Assembled ZA-180-64 (1 lb.) **$799.00**

80C287 Numeric Co-Processor
Assembled Z-416-SS (1 lb.) **$649.00**

20MB Hard Drive Assembled HA-2862-2 (2 lbs.) **$499.00**

40MB Hard Drive Assembled HA-2862-4 (2 lbs.) **$699.00**

5.25" External Disk Drive includes cable and 110 VAC adapter.
Assembled ZAS-180-54 (8 lbs.) **$399.00**

Numeric Keypad
Assembled ZA-3034-NP (2 lbs.) **$129.00**

Expansion Chassis requires ZA-180-91 cable (this page).
Assembled ZA-3040-EB (5 lbs.) **$449.00**

Adapter Cable
Assembled ZA-180-91 (3 lbs.) **$109.00**

Rapid Charge Battery
Assembled ZA-180-85 (3 lbs.) **$219.00**

2400 Baud Internal Modem
Assembled ZA-181-23 (2 lbs.) **$399.00**

Fax Modem sends and receives faxes from your computer, also serves as 2400 baud modem with MNP (for all H-3286, H-2862 and H-2860 laptops) Assembled HFM-9600 (2 lbs.) **$449.00**

Carrying Case
Assembled ZA-180-83 (3 lbs.) **$79.00**

SPECIFICATIONS	HS-2862
Microprocessor	80286
Clock Speed	12 MHz
Memory	Standard: 1 MB Optional: 3 MB
EMS Memory	Yes
Floppy Disk Drive	1.4 MB 3.5"
Display	Page White, 640 x 480
Standard Ports	1 parallel, 1 serial, expansion bus, 640 x 480 VGA video, external drive
Keyboard	Full size, 79 keys
Co-Processor Slot	Yes
Clock/Calendar	Yes
Operating System	MS-DOS 3.3+
Power Supply/Charger	120/240 VAC, 50/60 Hz
Dimensions	3" H x 12 1/4" W x 12 1/4" D

Monitor sold on page 8.

Select the computing power you need now with Heath's HS-5100

SKILL LEVEL 1 Now you can choose a computer that gives you the power you need today while taking advantage of those shared components that result in lower cost to you–all in a kit that's easy and fun to assemble. The Heath HS-5100 provides the chassis and components you need to start computing, complete with built-in VGA video, 1.4 MB floppy drive, 1 MB RAM and five-slot expandability.

Plug in a processor, whether the reliable, industry-standard 80286 or the even faster and more powerful 80386SX. Then add optional Heath floppy drives, a Winchester drive, memory or co-processors to tailor your computer to your needs. If you choose the HS-5100-A with the 80286 processor, you can upgrade later when you require more computing power. Why pay more when Heath offers this common sense way to buy exactly the computing power you need? Move up to a 286 or 386SX-based computer today with the HS-5100.

Kit HS-5100 includes built-in VGA video, 1.4 MB 3.5" floppy drive, 1 MB RAM, five expansion slots. Software: MS-DOS, MS-Works, Diagnostix and MS-Windows 3.0. Specify processor board when ordering.

Kit HS-5100-A With 286 processor (40 lbs.) **$1549.00**

Kit HS-5100-X With 386SX processor (40 lbs.) **$1799.00**

Accessories:

386SX Processor Board to upgrade HS-5100-A.
Assembled HA-63 (2 lbs.) **$359.00**

3.5" 40MB 25 MS Winchester Hard Drive
Assembled HWD-4011 (3 lbs.) **$499.00**

3.5" 1.4MB Disk Drive
Assembled ZD-144 (3 lbs.) **$248.00**

5.25" 1.2MB Disk Drive
Assembled ZD-12A (5 lbs.) **$250.00**

5.25" 360K Disk Drive
Assembled Z-207-7 (5 lbs.) **$199.00**

2MB RAM (Two 1MB SIMMs)
Assembled Z-605-1 (1 lb.) **$799.00**

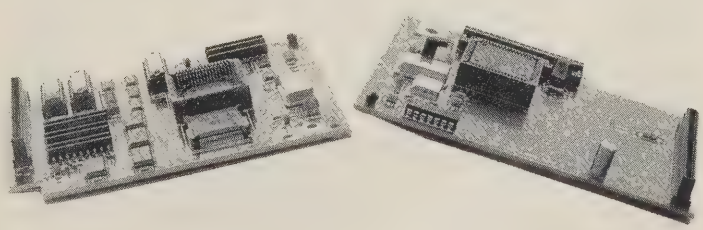
80287 Numeric Co-Processor
For HS-5100-A. Assembled Z-416-2 (1 lb.) **$525.00**

80387SX Numeric Co-Processor
For HS-5100-X. Assembled ZA-3700-CI (1 lb.) **$799.00**

Dual-Port Video Card
Supports VGA, EGA, CGA, MDA or Hercules TTL monitors.
Assembled HVB-550 (1 lb.) **$329.95**



SPECIFICATIONS	HS-5100
Microprocessor	80286 or 80386SX
Clock Speed	12MHz (80286) or 16 MHz (80386SX)
Memory	Standard: 1 MB Optional: 8 MB max.
EMS Memory	Yes
Floppy Disk Drive	1.4 MB 3.5"
Expansion Slots	5
Video	VGA 31KHz
Standard Ports	VGA Video, 1 parallel, 2 serial
Keyboard	101 keys
Co-Processor Slot	Yes
Clock/Calendar	Yes
Operating System	MS-DOS 4.0
Power Supply	115/230 VAC, 50/60 Hz, 125 W
	6 1/4" H x 14" W x 15 1/2" D



HA-63 80386SX *HA-22 80286*

Plug-in boards let you choose the reliable, industry-standard 286 processor or the even faster and more powerful 386SX!

SYSTEM SPECIALS
Save 25 - 50% on all systems and accessories above.
Call 1-800-253-0570.

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570



Monitor sold separately below.

SYSTEM SPECIALS
Save 25 - 50% on all systems and accessories below.
Call 1-800-253-0570.

HS-3629:
The most powerful kit computer ever

SKILL LEVEL 1 This powerhouse pulls away from any pack of PCs, bringing exceptional computing power to your desktop. Its 32-bit, 25 MHz 80386 processor has the muscle to speed through the most demanding programs.

The HS-3629 is perfect for windowing operations, desktop publishing, software development, CAD/CAM, large spreadsheets and networking. With zero wait state technology and the ability to run most PC and AT compatible software at a swift 25 MHz, the HS-3629 specializes in high-intensity computing. Discover the ease of computing with 386 power and the simplicity of assembling this extraordinary computer yourself!

Kit HS-3629-B includes 2MB RAM, 16K cache memory and an HVB-550 video card. Software: MS-DOS, MS Works, Diagnostix and MS-Windows 3.0. (46 lbs.) **$2599.00**

Kit HUS-386-25 80386 25 MHz Upgrade Kit upgrades H-248, H-2526, H-386 and H-386-3 models (12 lbs.) **$1999.00**

Accessories:

3.5" 1.4MB Disk Drive (Requires ZCA-14 cable)
Assembled ZD-14 (3 lbs.) **$219.00**

ZCA-14 Cable
Assembled ZCA-14 (1 lb.) **$29.00**

5.25" 1.2MB Disk Drive
Assembled ZD-12-A (5 lbs.) **$250.00**

5.25" 360K Disk Drive
Assembled Z-207-7 (5 lbs.) **$199.00**

40MB 28ms Winchester Hard Drive
includes all installation cables and formats at 44MB.
Assembled HWD-4028 (4 lbs.) **$749.00**

Color Video Card with dual ports that support either a VGA monitor or an EGA, CGA, MDA or Hercules monitor. Automatic sensing and switching allows you to run software written for one display mode in other modes.
Assembled HVB-550 (1 lb.) **$379.95**

80MB Winchester Hard Drive requires Z-417-2 cable (below) to install in floppy-only models. Formats at 72MB.
Assembled ZD-800 (1 lb.) **$1499.00**

Winchester Hard Drive Cable required for the installation of the first ZD-800 Winchester hard disk drive (described above)
Assembled Z-417-2 (1 lb.) **$20.00**

Memory Expansion Card holds up to 4 2MB SIMMs.
Assembled ZA-3600-MQ (1 lb.) **$649.00**

1MB Memory Expansion SIMM for CPU
Assembled ZA-3800-ME (1 lb.) **$299.00**

2MB Memory Expansion SIMM for ZA-3600-MQ
Assembled ZA-3600-MG (1 lb.) **$599.00**

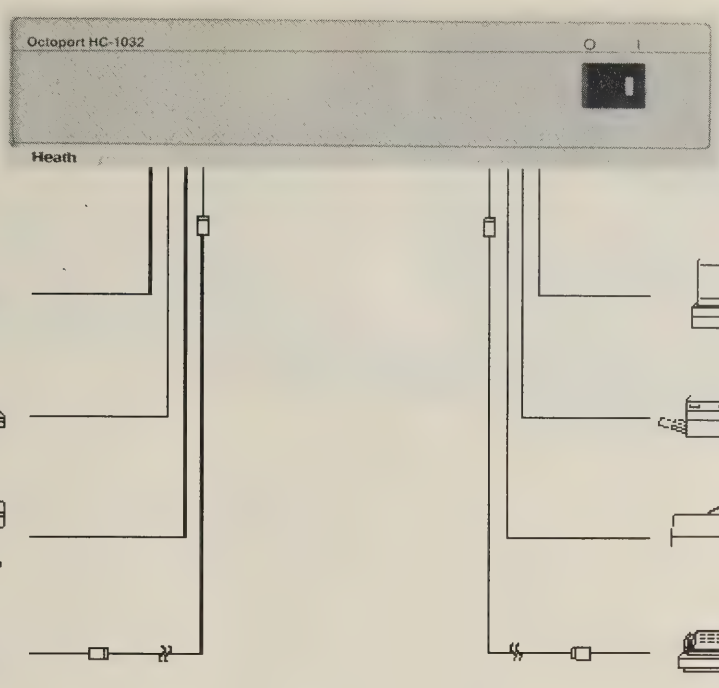
80387 25 MHz Numeric Co-Processor
Assembled ZA-3600-CI (1 lb.) **$1299.00**

Weiteks 25 MHz Numeric Co-Processor
Assembled ZA-3600-CW (1 lb.) **$1499.00**

Zenith flat technology 14" color VGA monitor, includes tilt/swivel base.
Assembled ZCM-1492 (45 lbs.) **$999.00**

Zenith 14" page white monitor
Assembled ZMM-149-P (21 lbs.) **$299.00**

SPECIFICATIONS	HS-3629
Microprocessor	80386
Clock Speed	25 MHz
Memory	Standard: 2 MB Optional: 64 MB
Cache Memory	16K
EMS Memory	Yes, maximum 256K
Floppy Disk Drive	1.4 MB 3.5"
Expansion Slots	4
Video Card	HVB-550
Standard Ports	1 parallel, 2 serial
Keyboard	101 keys
Co-Processor Slot	Yes
Clock/Calendar	Yes
Operating System	MS-DOS 3.3+
Power Supply	115/230 VAC, 50/60 Hz
Dimensions	6" H x 21" W x 17" D



Octoport ends cable swapping

SKILL LEVEL 3 Link and unlink computers and peripherals electronically with Octoport by Heath. Share a printer with others, connect your computer to a modem one minute and output to a laser printer the next, exchange files electronically between computers in your office.

This intelligent switch box makes it easy to connect and choose computer and peripheral combinations without ever flipping a switch or swapping a cable. You control and monitor Octoport completely from your computer keyboard.

Octoport has six RS-232 serial ports and two Centronics-compatible parallel ports (one output, one input or output) to integrate up to eight devices into an efficient, resource-sharing network. Peripheral combinations are almost unlimited, thanks to its automatic conversion of serial to parallel or parallel to serial, as well as baud rate conversion. With a DOS print spooler or printer buffer, Octoport can automatically cue multiple print jobs.

An integral "mailbox" function allows users to share messages, while built-in battery-backed memory stores mailbox messages and configuration information when the unit is off or the power fails. Octoport even includes a terminal emulation program, ideal for transferring files between computers or over modems.

While it offers powerful peripheral-linking capabilities, Octoport has single-keystroke help functions that explain the use of each of its 19 built-in commands. And one-key commands let you check or save the configuration of its eight ports at any time.

Combine the Octoport with HCA-1032-1 Line Extenders (below) to use computers or peripherals up to 4000 feet away. Dimensions are 2 1/2" H x 9 1/2" W x 8 3/4" D.

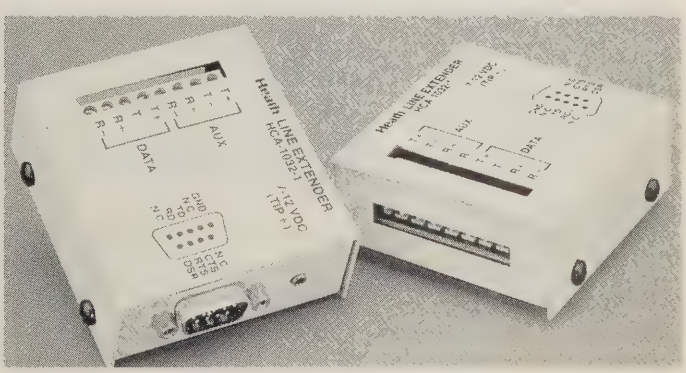
Kit HC-1032 (5 lbs.) **$239.95**

Assembled HCW-1032 (2 lbs.) **$259.95**

Line Extenders break the 50-ft. barrier

Connect computers and peripherals over 4000 feet apart using 4 or 8-conductor wiring with Heath Line Extenders. Normally, RS-232 serial cables are limited in length to 50 ft. or less to avoid data loss. Heath Line Extenders break the 50 ft. barrier by converting data from RS-232 to RS-422 for transmission, then back to RS-232 at reception. By using differential signals, RS-422 provides much better immunity to noise than traditional RS-232 installation, extending data transmission capabilities. Two Line Extenders are required for operation. Wiring is not included.

Assembled HCA-1032-1 (2 lbs.)
***each* $29.95 Limited Quantities!**



Specifications: Interfaces: RS-232 and RS-422. Baud Rates: Up to 19,200. Number of Circuits: Four: 2 transmit, 2 receive. Handshaking: RTS/CTS or DTR/DSR; jumper selectable. RS-232 Connector: 9-pin D type. RS-422 Connector: 8-wire connector block. Power: 7 to 12 VDC with supplied plug-in power supply.

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570



Digital memory scope

The SD-4850 turns your personal computer or scope into a dual trace 50 MHz digital storage scope capable of displaying fast digital pulses.

When attached to a PC, the SD-4850's functions are controlled from the computer keyboard. Display one or two channels on a graphic 8 x 10 division graticule. On-screen menus show all scope functions. Automatically obtain readouts of voltage, time and frequency at any point on a waveform. Even store waveforms on a floppy disk for later comparison.

This versatile digital scope also enables you to upgrade a low-bandwidth, single-channel bench scope to a dual trace 50 MHz storage instrument. When used with a scope, the SD-4850's operations are controlled from the clearly marked front panel, and all settings are plainly identified by bright LED indicators. Your scope must have a 5 MHz or greater bandwidth, one vertical channel with 0.5V/divisions sensitivity, ability to trigger from a second source and triggered sweep (on the plus slope of a TTL level signal).

Assembled SD-4850 (11 lbs.) **$495.00**

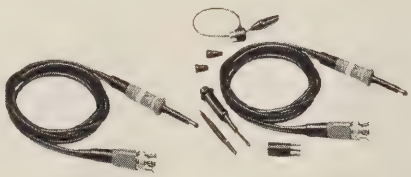
Specifications: VERTICAL: Deflection Factor: Sensitivity: 5 mV/div to 5 V/div; 10 steps in a 1-2-5 sequence. Vertical Response: 5 mV to 5 volts/div. Rise Time: 7 ns or less. Overshoot: Less than 5%. Maximum Input: 125 volts peak combined AC and DC. HORIZONTAL: Time Bases Ranges: 20 s/div to 10 ns/div in a 1-2-5 sequence. Maximum Sampling Rate: Real Time: 100 KS/S. Equivalent Time: 5 GHz. GENERAL: Vertical Resolution: 8 bits (1 part in 256). Record Length: 512 samples. Interface: RS-232C. Baud Rate: 110 to 9600 baud (selected by internal jumper). Power: 120 VAC, 60 Hz. Dimensions: 4 1/2" H x 10" W x 12 1/2" L.



Oscilloscope probe

SKILL LEVEL 1 This low-capacitance scope probe is useful for tracing waveforms in TV circuits without causing signal distortion. Use the 10X position for minimum capacitive loading of the circuit, switch to 1X for maximum sensitivity.

Kit PK-1 (1 lb.) **$17.95**



250 MHz scope probes

A set of two modular 10X probes, switchable 1X/10X, with a bandwidth of 250 MHz. Packaged with accessory tips.

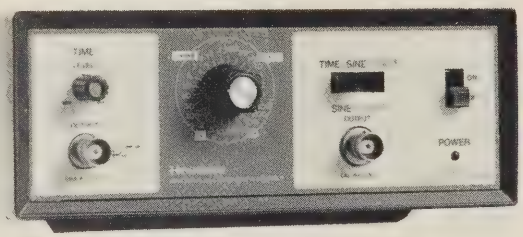
Assembled P-250-2 (1 lb.)
$99.95 Limited Quantities!



350 MHz scope probes

A set of two modular 10X probes with a bandwidth of 350 MHz. Packaged with a full complement of accessory tips.

Assembled P-350-2 (1 lb.)
$79.95 Limited Quantities!



SAVE $20!

Precision calibrator keeps your scope up to spec

SKILL LEVEL 2 Keep your scope up to specs at all times. The IG-4244 provides all the accuracy you'll need for making critical scope adjustments and calibrations.

Kit IG-4244 (6 lbs.) ~~**$199.95**~~ **NOW $179.95**

Specifications: TIME SIGNAL: Range: 0.5 s to 10 ns square wave in a 1-2-5 sequence. Accuracy: 0.015%. Amplitude: 0.5 s to 20 ns–100 mV to 1 V peak. 10 ns–100 mV to 0.5 V peak. Rise Time: <1 ns. VOLTAGE SIGNAL: Ranges: 1 mV to 100 V peak square wave in a 1-2-5 sequence. Accuracy: Within 1% into a ≥ 1 MΩ load when calibrated with an external voltmeter. Rise Time: <5 µs. Frequency: Approx. 1 kHz. SINE WAVE SIGNAL: Frequency: Approx. 1 kHz. Amplitude: Approx. 1 V peak-to-peak. GENERAL: Power: 120/240 VAC, 50/60 Hz. Dimensions: 3" H x 7 1/4" W x 9 1/2" D.



All-in-one 40 kV probe

SKILL LEVEL 1 With this one probe you can measure voltages up to 40,000 with an accuracy of ±3% in any negative ground circuit. Measurements are read directly from a built-in meter. CAUTION: We value you as a friend. Please follow all safety practices when measuring high voltages.

Kit IM-5215 (2 lbs.)
$49.95 Limited Quantities!



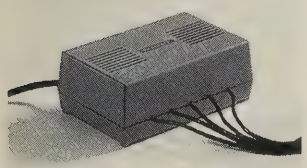
Triple output DC supply

SKILL LEVEL 2 This supply furnishes the power you need for almost any application. A special built-in tracking circuit maintains the voltage difference between supplies when you're working with operational amplifier circuits.

Kit IP-2718 (12 lbs.) **$139.95**

Assembled SP-2718 (12 lbs.) **$200.00**

Specifications: Outputs: 5 VDC +5% at 1.5 amps. Two outputs at 0-20 VDC at 0.5 amps, continuously adjustable. Regulation: <0.1% on 20 V supplies, <3% on 5 V supplies. Power: 120/240 VAC, 50/60 Hz. Dimensions: 4.5" H x 10.75" W x 9" D.



5280-series DC supply

Simultaneously furnishes DC power to all 5280-series instruments, including the IG-5282 (on page 5) and IT-5283 (this page). Operates on 120 or 240 VAC. 6" H x 3 3/4" W x 3" D.

Kit IPA-5280-1 (3 lbs.) **$39.95**



Handy signal tracer

SKILL LEVEL 1 An effective tool for quickly tracing signals in radio and TV receivers. Lets you check voltages and resistance by simply listening to an audible tone. Also lets you detect faulty RF or IF stages, even isolate faulty components.

Kit IT-5283 (5 lbs.) **$59.95 Limited Quantities!**

Specifications: Speaker: 3" permanent magnet, 16Ω. Power: Two 9V transistor batteries and/or IPA-5280-1 Power Supply (this page). Dimensions: 5 3/4" H x 11" W x 7 3/4" D.



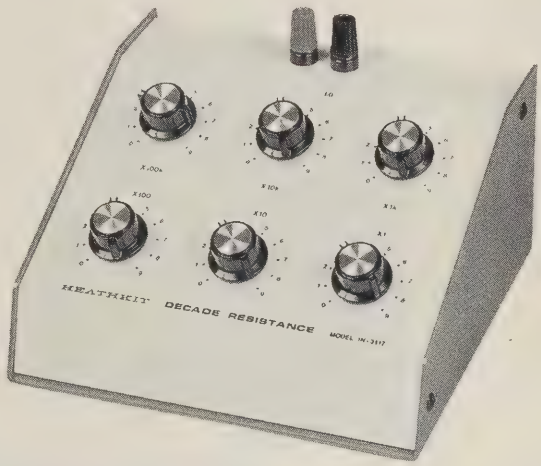
Regulated power supply

SKILL LEVEL 2 Use this power supply to test new ideas and circuits in stereo vacuum tube amplifiers and amateur radio gear, or power any circuit up to 400 volts DC. Built in is a 0 to –100 volt DC tube bias supply. Separate 6.3 and 12.6 VAC heater filament voltages are accessible from front panel binder posts.

Kit IP-2717-A (19 lbs.) **$199.95**

Assembled SP-2717-A (20 lbs.) **$299.95**

Specifications: B+ VOLTS: Voltage: 0-400 VDC, regulated. Current: 0-100 mA continuous, 125 mA intermittent. Regulation: Output variation <1% from no load to full load. Ripple: <10 mV RMS. C– VOLTS: Voltage: 0 to –100 VDC at 1 mA. FILAMENT VOLTS: Voltage: 6.3 VAC at 4 amperes or 12.6 VAC at 2 amperes. GENERAL: Power: 120/240 VAC, 50/60 Hz. Dimensions: 5 1/2" H x 13 3/8" W x 11 1/4" D.



Decade resistance kit

SKILL LEVEL 1 This accurate laboratory-type instrument supplies a wide range of resistance values for use in electrical measurements. Use it whenever you need an accurate variable multiplier or shunt, substitute resistor, or as an arm for DC and AC bridges. An easy-to-build kit that will supply any resistance value from 1 to 999,999Ω in 1Ω steps.

Kit IN-3117 (3 lbs.) **$99.95**

Specifications: Resistors: Precision, 1/2% accuracy. 1 watt. Max. Current: X1 = 1000 mA, X10K = 300 mA, X100 = 100 mA, X1K = 30 mA, X10K = 10 mA, X100K = 3 mA. Dimensions: 5" H x 7 1/2" W x 6 5/8" D.

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	Concepts of Electricity	EB-3100	21.95	EB-3100-40	12.95	EB-3100-50	10.95	ETW-3600	229.95	EB-3100-30	34.95	NOT USED	
Basic Electronics	DC Electronics	EB-6101-A	21.95	EB-6101-41 (1 lb.)	12.95	EB-6101-51	10.95	ETW-3600	229.95	EB-6101-31 (2 lbs.)	24.95	EV-3101-A	39.95
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	Test Instruments	EB-6105 (4 lbs.)	21.95	EB-6105-40	12.95	EB-6105-50	10.95	ETW-3600	229.95	EB-6105-30	29.95	NOT USED	
	Electronic Communications	EB-6106	21.95	EB-6106-40 (1 lb.)	12.95	EB-6106-50	10.95	ETW-3600	229.95	EB-6106-30	34.95	NOT USED	
	Digital Techniques	EB-6201-A (3 lbs.)	24.95	EB-6201-41	12.95	EB-6201-51	10.95	ETW-3700	229.95	EB-6201-31	34.95	NOT USED	
	Digital Techniques Additional Exper.	NOT USED		EB-6201-71 (1 lb.)	12.95	EB-6201-52	10.95	ETW-3700	229.95	NOT USED		NOT USED	
	Data Communications and Networks	EB-8090 (5 lbs.)	24.95	EB-8090-40 (1 lb.)	12.95	EB-8090-50	10.95	ETW-1000 (13 lbs.)	329.95	EB-8090-30	19.95	NOT USED	
Advanced Electronics	Operational Amplifiers	EB-601	21.95	EXPERIMENTS IN TEXT		EB-601-50	10.95	ETW-3600	229.95	EB-601-30	24.95	NOT USED	
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	Laser Technology	EB-610	21.95	EB-610-40 (1 lb.)	12.95	EB-610-50	10.95	EWS-4200-A (5 lbs.)	395.00	EB-610-30 (3 lbs.)	39.95	NOT USED	
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	8-Bit Interfacing Applications	EB-6820	24.95	EB-6820-40	12.95	EB-6820-50	10.95	EWS-6811	695.00	EB-6820-30	74.95	NOT USED	
	8085 Microprocessor Programming	EB-8085	24.95	EB-8085-40	12.95	EB-8085-50	10.95	EWS-8085	695.00	EB-8085-30	49.95	NOT USED	
	8085 Microprocessor Interfacing and Applications	EBI-8085	24.95	EBI-8085-40	12.95	EBI-8085-50	10.95	EWS-8085	695.00	EBI-8085-30	99.95	NOT USED	
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Microcomputer Servicing	Microcomputer Servicing Textbook	EB-150	24.95	EB-150-40	12.95	NOT USED		NOT USED		NOT USED		NOT USED	
CAD	AutoCAD	EB—609 (6 lbs.)	39.95	NOT USED		NOT USED		NOT USED		NOT USED		NOT USED	
Applied Physics	Mechanisms: Fundamentals of Mechanical Devices	EW-4300	24.95	EW-4300-40	17.95	EW-4300-50	10.95	ET-4400	649.00	NOT USED		NOT USED	
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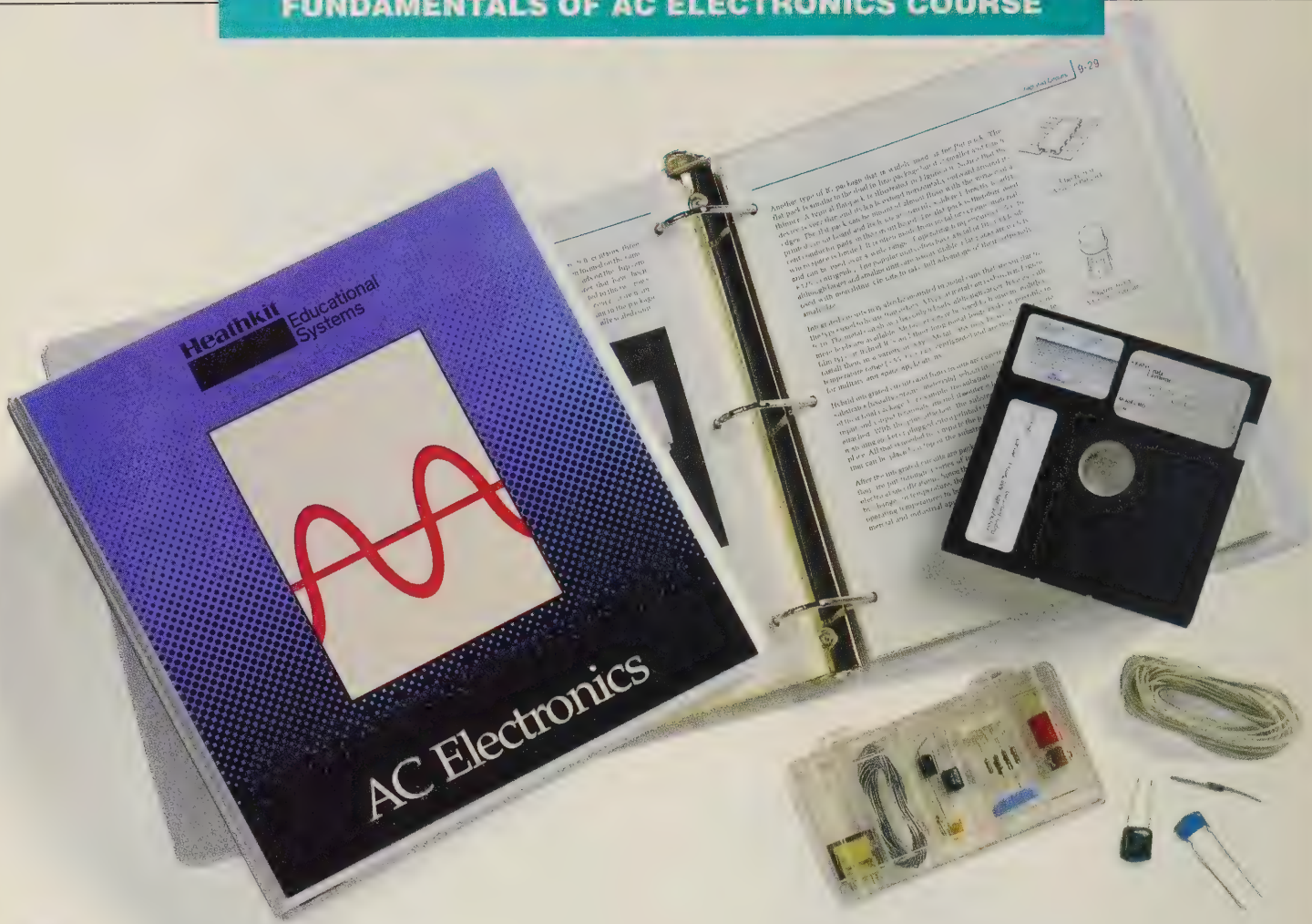
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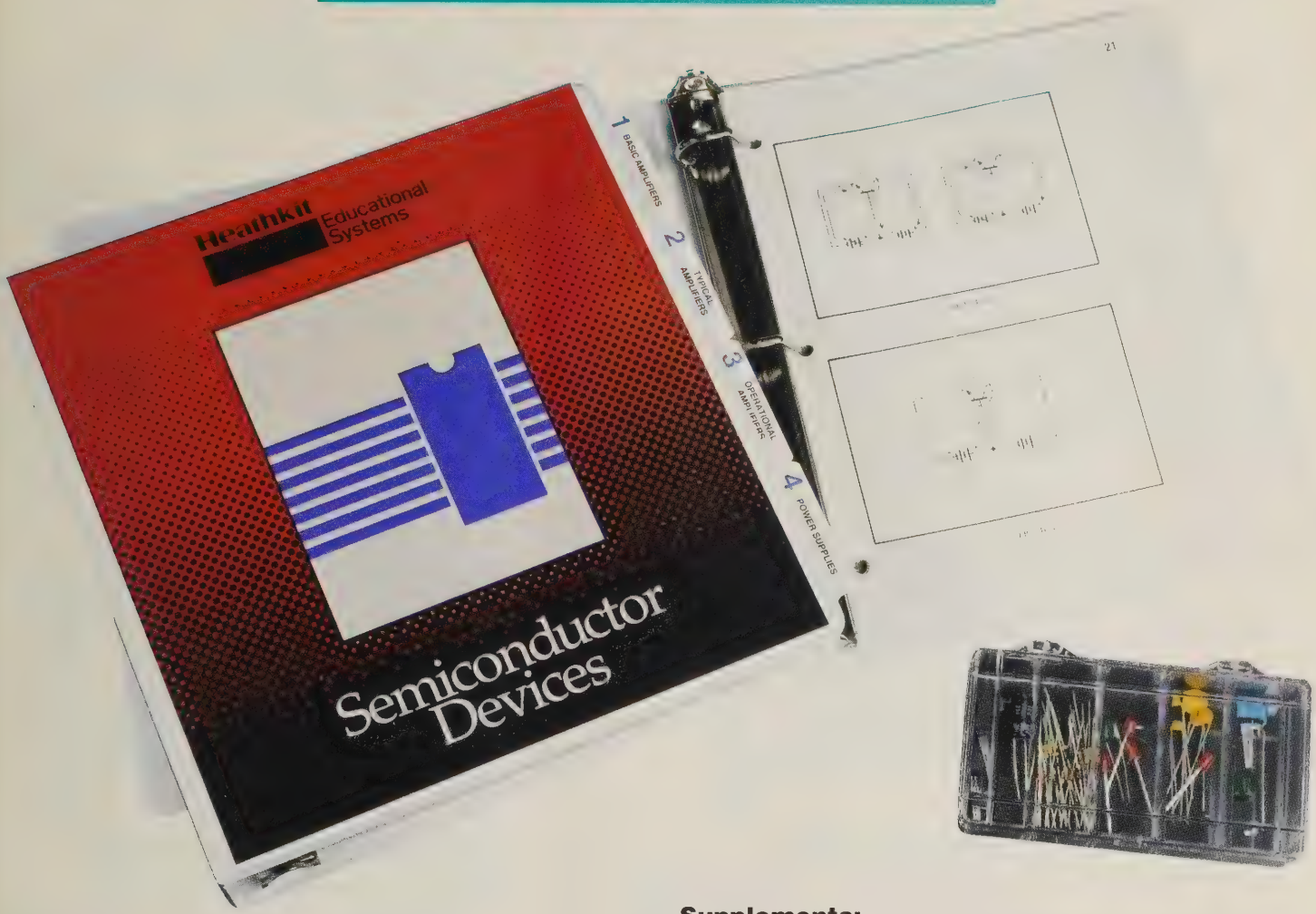
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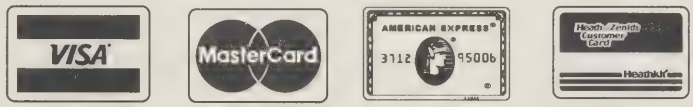
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- The dollar amount of the suspected error.
- Describe the error and explain, if you can, why you believe there is an error. If you need more information, describe the item you are not sure about.

If you have authorized us to pay your credit card bill automatically from your savings or checking account, you can stop the payment on any amount you think is wrong. To stop the payment your letter must reach us three business days before the automatic payment is scheduled to occur.

Your Rights and Our Responsibilities After We Receive Your Written Notice

We must acknowledge your letter within 30 days, unless we have corrected the error by then. Within 90 days, we must either correct the error or explain why we believe the bill was correct.

After we receive your letter, we cannot try to collect any amount you question, or report you as delinquent. We can continue to bill you for the amount you question, including finance charges, and we can apply any unpaid amount against your credit limit. We do not have to pay any questioned amount while we are investigating, but you are still obligated to pay the parts of your bill that are not in question.

If we find that we made a mistake on your bill, you will not have to pay any finance charges related to any questioned amount. If we didn't make a mistake, you may have to pay finance charges, and you will have to make up any missed payments on the questioned amount. In either case, we will send you a statement of the amount you owe and the date that it is due.

If you fail to pay the amount that we think you owe, we may report you as delinquent. However, if our explanation does not satisfy you and you write to us within ten days telling us that you still refuse to pay, we must tell anyone we report you to that you have a question about your bill. And, we must tell you the name of anyone we reported you to. We must tell anyone we report you to that the matter has been settled between us when it finally is.

If we don't follow these rules, we can't collect the first $50 of the questioned amount, even if your bill was correct.

Special Rule for Credit Card Purchases

If you have a problem with the quality of property or services that you purchased with a credit card, and you have tried in good faith to correct the problem with the merchant, you may have the right not to pay the remaining amount due on the property or services. There are two limitations on this right:

(a) You must have made the purchase in your home state or, if not within your home state, within 100 miles of your current mailing address; and
(b) The purchase price must have been more than $50.

These limitations do not apply if we own or operate the merchant, or if we mailed you the advertisement for the property or services.

HEATH PREFERRED CUSTOMER CREDIT APPLICATION

**TO: Heath Company, P.O. Box 8589,
Benton Harbor, Michigan 49022**

I hereby purchase the total amount of merchandise listed on the reverse side plus shipping charges and tax, if any, less down payment, if any, plus the FINANCE CHARGE which, in lieu of being added to this contract in total as of the date hereof will be added monthly to the previous month's ending balance of my account before deducting payments and credits or adding purchases made during the current billing period. FINANCE CHARGE will be assessed on the balance according to the following schedule or in accordance with the laws of the State of my residence whichever is the lesser.

Account Balance Amount: ALL BALANCES. Periodic Percentage Rate 1 1/2%.

ANNUAL PERCENTAGE RATE: 18%

The minimum FINANCE CHARGE assessed will be 50¢ on any small balances. If within 30 days from my billing date I pay the full outstanding balance shown on my statement, no FINANCE CHARGE on such balance, will be charged on any subsequent statement. The highest level of my balance reflected by the payment chart will govern my monthly payment, beginning 30 days from the cycle closing date shown on the statement, until such time as the total unpaid balance of each purchase is fully paid (minimum $10). Regular or Extended Terms are the two plans available for my use. To use the extended plan, the balance of my account must be at least $500.00. The amount of my monthly installment is determined from charts below.

IMPORTANT: Please fill in completely if you are a new account or if your old account has been inactive for 12 months or more.

Birth: Mo. Day Year ☐☐☐☐☐☐

Social Security Number ☐☐☐☐☐☐☐☐☐

Account to be in the name of:
First Initial Last

Present address — How long? yrs. mos.

City State Zip

Former address — How long? yrs. mos.

City State Zip

☐ Rent
☐ Own
☐ Board

Monthly rent or mortgage _____

No. of dependent children _____

HEATH COMPANY
P.O. BOX 8589
BENTON HARBOR, MI 49022-8589

Place Stamp Here

Name _____
Address _____
City & State _____
Zip _____

Be sure to:

- ***Sign and enclose your check, or complete charge card information.***
- ***Print your name, address and zip clearly.***
- ***Print model numbers and product descriptions clearly. Thank you for your order.***

Heath Company

Bill to: (Always use same name) 224-001

(in case we need to contact you concerning your order)

Ship to (if different than bill to):

Name _____

Address _____

_____ Apt. _____

City _____ State ____ Zip _____

If address is incorrect, please correct here.

Name _____

Address _____

_____ Apt. _____

City _____ State ____ Zip _____

Please do not write in this space

QUAN.	MODEL NUMBER	DESCRIPTION	PRICE PER ITEM	TOTAL PRICE	SHIP WEIGHT

SUBTOTAL	
Less allowance if any –	
Merchandise TOTAL	
Add 4% sales tax for Michigan deliveries, add 6% sales tax for California deliveries +	
Ship Charges (See Shipping Chart) +	
Plus amount due from previous order +	
TOTAL AMOUNT OF ORDER	

Total Ship Weight _____ lbs.

OB-177

ORDER TOLL-FREE 24 HOURS A DAY

1-800-253-0570

OR FAX YOUR CREDIT CARD ORDER: 616-982-5577

When ordering by phone please provide the operator with the six-digit code that appears near your name and address.

For 2nd Day Air Service please check here. ☐
See Shipping Chart for additional charges.

Method of Payment

☐ **Cash** — Please send check or money order (U.S. currency only)

☐ **Charge** — Check one

☐ VISA ☐ MasterCard ☐ American Express

Account No. _____

Exp. date: Month _____ Year _____

Signature _____
(Necessary for all charges)

☐ **Heath Revolving Charge:**

To open a new account fill out the Heath Preferred Customer Credit Application and include a down payment of at least 10%. New accounts may be opened with purchases as small as $100. Add-ons to your account require no minimum. Current customers please enter account number and sign below.

☐☐☐☐☐☐☐

Signature _____

DIGITAL TECHNIQUES COURSE

Develop expertise in digital circuitry

What you get:

- Comprehensive 900+ page text
- 26 hands-on experiments
- Parts package with all necessary electronic components
- 5.25" and 3.5" MS-DOS course review disks
- Earn 4.0 Continuing Education Units (CEUs)

What you'll need:

- ET-3700 Digital Trainer
- Multimeter
- Oscilloscope

Course Requirements:

- Basic Electronics series

Supplement:

- Audiovisual Package: Two lecture tapes and illustrated workbook. Order at right.

The Digital Techniques course introduces you to the technological principles of logic circuits, digital integrated circuits, Boolean algebra, memory devices and more. The course provides a major stepping stone into advanced electronics.

Through performing 26 hands-on experiments, you'll gain confidence and knowledge.



You'll design, build and analyze a wide variety of digital circuits. And you'll learn to troubleshoot digital circuits using standard test equipment.

EE-3201-A (7 lbs.) **$99.95**

Supplement:

EEA-3201-A Audiovisual Package (2 lbs.) **$21.95**

SAVE! Order EE-3201-A Digital Techniques course with the ET-3700 Digital Trainer and save $50.00.

EES-3201-C (17 lbs.) **$179.90**

DIGITAL TRAINER



Design circuits more efficiently

Use to perform experiments for the following courses:

- Digital Techniques
- Fiber Optics

The versatile ET-3700 Digital Trainer speeds and simplifies digital circuit design and experimentation. It enables you to apply course material in a practical way—through both experiments and by building and testing your own prototypes. It has a removable solderless breadboard that accepts up to #20 solid wire and the leads of almost any standard electronic component.

And it's remarkably quick and easy to build. Or, if you prefer, you may order it assembled.

A powerful learning tool

Features include three built-in regulated power supplies: positive and negative 12-volt DC and positive 5-volt DC voltages to both digital and linear circuits. In addition, the ET-3700 supplies a line-frequency square wave (60 or 50 Hz). And a great deal more. But even with all its features, the ET-3700 is lightweight, compact and portable.

Kit ET-3700 (6 lbs.) **$129.95**

Assembled ETW-3700 (6 lbs.) **$229.95**

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570

MICROPROCESSORS COURSE

Gain command of the fundamentals

What you get:

- Comprehensive text including 150 pages of programming experiments and 110 of hardware interfacing experiments
- Earn 8.0 Continuing Education Units (CEUs)

What you'll need:

- ET-3400-A trainer
- Multimeter
- Oscilloscope

Course Requirements:

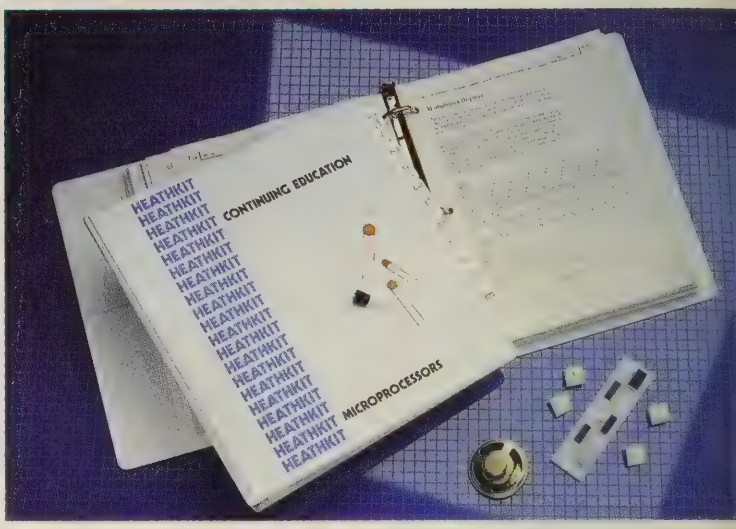
- Digital Techniques

Knowledge of microprocessor theory and operation is becoming essential in many fields.

Ready yourself for the future with this first of the Heathkit Microprocessor courses, designed to give you a solid foundation in the basics.

Learn by experience

You'll start by reviewing number systems and codes. From there you'll develop an understanding of computer arithmetic and programming. You'll build your knowledge of programming and hardware by performing fascinating lab experiments.



You'll find out how to interface microprocessors to RAM, ROM and various input/output devices such as Peripheral Interface Adaptors (PIA).
EE-3401-A (10 lbs.) **$99.95**

SAVE! Order the EE-3401-A Microprocessors course with the ET-3400-A Microprocessor Trainer and save $60.00.

EES-3401-A (17 lbs.) **$319.90**

MICROPROCESSOR INTERFACING



Advance your knowledge of interfacing techniques

What you get:

- Two volume comprehensive illustrated course
- 10 hands-on experiments
- Earn 7.0 Continuing Education Units (CEUs)

What you'll need:

- ET-3400-A trainer
- Oscilloscope
- Multimeter

Course Requirements:

- Microprocessors Course

This second course of the series, will help you become adept with interfacing techniques and advanced microprocessors. You'll cover the 6800 family, including the powerful 6809, and continue on to the 68000 microprocessor. You'll delve into advanced PIA interfacing, analog conversion, serial data communications, memory devices and programmable timers.

In 10 experiments, you'll gain an understanding of display multiplexing, I/O control, handshaking and the PIA. You'll practice analog-to-digital conversions and ADC interfacing plus EPROM programming, ROM/EPROM interfacing and much more.
EE-3402 (11 lbs.) **$99.95**

MICROPROCESSOR APPLICATIONS



Explore the microprocessor's many uses

What you get:

- Two-volume comprehensive illustrated course
- 10 hands-on experiments
- Earn 8.0 Continuing Education Units (CEUs)

What you'll need:

- ET-3400-A trainer
- Multimeter
- Oscilloscope

Course Requirements:

- **Microprocessors and Microprocessor Interfacing**

Microprocessors have a seemingly endless range of applications in business, industry and the consumer market. This course will give you insight into the current applications, as well as the possibilities for the future.

Master advanced microprocessor principles

You'll study digital-to-analog and analog-to-digital converters, transducers, phase-locked loops and more. You'll construct several microprocessor controlled devices, including a microprocessor/stepper motor interface with a control circuit and a programmable digital frequency synthesizer. Through 10 experiments, you'll develop a solid understanding of the impact of microprocessors on the world of today—and tomorrow.

EE-3405 (10 lbs.) **$99.95**

8-BIT MICROPROCESSOR TRAINER

Versatile trainer teaches the art and science of microprocessors



Use for the following courses:

- Microprocessors
- Microprocessor Interfacing
- Microprocessor Applications

This flexible, general purpose training unit—designed for the Heathkit Microprocessor course series—can be used anywhere you need a microprocessor-based software development system or as a design aid for developing special interface circuitry. It will give you hands-on experience with microprocessor operation, programming and applications. And you can build it yourself, quickly and easily, with our simple, step-by-step instructions. Or, if you prefer, you may order it assembled.

Compact yet powerful

The Microprocessor Trainer is built around the popular 6808 microprocessor unit and gives you 512 bytes of user-accessible RAM and a 1K monitor ROM. It features a solderless breadboard that lets you build prototype logic circuitry. And it has a 17-key hexadecimal-based keypad and six 7-segment LED display digits for easy data entry, data review and troubleshooting.

Requires 120 VAC, 50/60 Hz at 30 watts maximum power. $3\frac{1}{2}$"H x $12\frac{1}{8}$"W x $11\frac{3}{4}$"D.
Kit ET-3400-A (7 lbs.) **$299.95**
Assembled ETW-3400-A (6 lbs.) **$449.95**

'C' PROGRAMMING COURSE

Advance beyond BASIC

What you get:

- Comprehensive illustrated text
- 9 hands-on experiments
- Bonus! Ecosoft C Compiler and CED Editor software–a $59.95 value–absolutely free with course
- Earn 3.0 Continuing Education Units (CEUs)



What you'll need:

- Heath/Zenith or IBM compatible PC with at least 384K RAM (a hard disk drive is recommended), PC or MS-DOS version 2.0 or higher and at least one 5.25" floppy disk drive. Does not operate with MS-DOS and PC-DOS 4.0 or higher.

Course Requirements:

- Basic knowledge of PC or MS-DOS commands and familiarity with at least one high-level programming language

Whether you want to advance your career, or simply get more from your computer, C is the language to learn. And with this carefully paced Heathkit course, you'll quickly and easily master the essentials.

C is quickly becoming the standard language of the computer industry—and with good reason. With the C Programming course, you'll learn how to gain complete control over your computer and write programs on one computer and transport them to another. You'll learn more capabilities than BASIC, PASCAL, FORTRAN or COBOL can give you. Yet C is easy for the less technically oriented programmer to grasp.

Get free software

Included is Ecosoft's C Compiler and CED Editor software. This $59.95 value comes absolutely free with the C Programming course.
EC-1124 (3 lbs.) **$99.95**

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS COURSE

Get the latest on smart machines

What you get:

- Two volume comprehensive illustrated course
- 13 hands-on experiments on two 5.25" disks
- Bonus! Two-disk demonstration of Texas Instruments' PC Easy Expert Systems program
- Earn 6.0 Continuing Education Units (CEUs)

What you'll need:

- Heath/Zenith or IBM compatible PC with one disk drive and 512K RAM

Course Requirements:

- Basic knowledge of computer operations in at least one programming language

Today artificially intelligent (AI) systems are being developed and used in a wide array of industries. And the future applications for AI are virtually limitless. As a result, AI literacy is becoming increasingly important for engineers, technical managers and programmers.

Learn development, design, applications, more

You'll learn what expert systems are and how they work. You'll learn the ten steps to creating an expert system, including the computation of return on investment. You'll gain a practical understanding of robotics, natural language processing, voice recognition and more plus an overview of AI programming and special AI hardware. Thirteen AI experiments will help you develop a solid practical understanding of this rapidly expanding technology.
EC-1126 (6 lbs.) **$74.95**



25 OR 40 MHz DELUXE OSCILLOSCOPES

Get features galore at a great price

When it comes to value, these ergonomically designed oscilloscopes can't be beat. They give accurate measurements, and include a host of time-saving features. Simply put, you just can't buy a better instrument for the money. Virtually identical in most respects, choose the SO-4552 25 MHz oscilloscope or the SO-4554 40 MHZ oscilloscope according to your particular needs.

Extra sensitivity...extra capabilities

Both oscilloscopes give you 1 millivolt-per-division sensitivity that lets you measure signals too small for 5 millivolt instruments. The 10X horizontal magnifier lets you expand signals twice as much as ordinary 5X magnifiers. TV horizontal and vertical triggers let you look at TV waveforms that would confuse less sophisticated trigger circuits. And the trigger holdoff function lets you achieve stable triggering on repetitive pulse trains. You can use the A+B mode with B inverted to make differential measurements without ground reference, and the XY mode for Lissajou patterns.

Features that make these scopes a pleasure to use

These instruments operate on 90-264 VAc, 50/60 Hz. Each has a built-in component tester for in-and-out-of-circuit current vs. voltage testing. And a beam finder saves you time by forcing off-screen traces back on screen. The variable graticule illumination makes for easy observation of signals under low light conditions and is essential if you expect to record your measurements with an oscilloscope camera.

The handle adjusts so that you can tilt the scope at a convenient angle. And a built-in calibrator lets you check instrument accuracy and adjust the compensation of your probes. The SO-4554 even features a 9KV accelerating potential for bright traces at higher sweep speeds.

25 MHz Oscilloscope
Assembled SO-4552 (22 lbs.) **$399.95**

40 MHz Oscilloscope
Assembled SO-4554 (22 lbs.) **$599.95**

Specifications:

VERTICAL: Ranges: 5 mV to 5 V/DIV; in 1-2-5 with variable. Magnification: X5. Accuracy (1 kHz): ±3%, ±5% for X5 gain. SO-4552 Bandwidth: DC to 25 MHz, DC to 10 MHz on 1 mV/DIV. Rise Time: 18 ns. SO-4554: Bandwidth: DC to 40 MHz, DC to 15 MHz on 1 mV/DIV. Rise Time: 9 ns. Overshoot: 5%. Maximum Input: 400 V. Operating Modes: CHA, CHB, DUAL (ALT or CHOP), and ADD. HORIZONTAL: Sweep: .2s to .1µs/DIV; in 1-2-5 with variable. Magnification: X10. Accuracy: ±3% for X1, ±6% for X10. X-Y: Sensitivity: Same as CHA and CHB. Frequency Response: DC to 1 MHz. TRIGGER: Source: CHA, CHB, LINE and EXT. Coupling: AUTO, NORM, TV-V, TV-H. Slope: "+"; pull TRIG LEVEL for "-". External Input: Impedance: 1 MΩ, 30 pF. Maximum Input 300 V. GENERAL: Power: 90-132 VAC or 198-264 VAC, 50/60 Hz, 40W. Dimensions: 5¼" H x 12⅝" W x 17½" D.

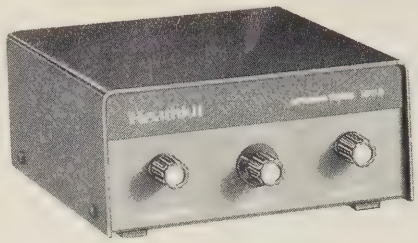


150 MHz PROBE

Enjoy premium performance without the premium price

This feature-packed P150 probe with switchable 10:1 and 1:1 ratios delivers everything you want at an economical price. Advanced design delivers quick pulse response and faster risetime–less than 1.5 ns.
Assembled P-150 (1 lb.) **$37.95** Assembled PS-150 set of two (2 lbs.) **$69.95**





100-watt antenna tuner with 4:1 balun

SKILL LEVEL 1 Enjoy almost unlimited matching capabilities with the HFT-9-B. It provides matching to a wide range of output impedances with a built-in 4:1 ferrite balun. The HFT-9-B includes connectors for coaxial feed, balanced line and long-wire antennas. A large 12-tap, air-wound inductor, with silver-plated wire and tap switch, allows precise matching capability between 1.8 and 30 MHz. Adjustments are easy with continuously variable transmitter/antenna controls. The unit's small size and easy assembly make it perfect for mobile HF operation and an outstanding addition to any amateur radio station. Dimensions are 2 5/8" H x 5 3/8" W x 7" D.

Kit HFT-9-B (3 lbs.)
~~$59.95~~ **NOW $49.95**

Deluxe antenna tuner

25% OFF!



SKILL LEVEL 2 Use the Deluxe Antenna Tuner to match an antenna to your transmitter at any frequency in the 160-10 meter HF spectrum. You get a first-rate antenna tuner with most of the features of a dual wattmeter. In addition, it covers the 160-meter and WARC amateur bands.

The tuner will effectively tune and match balanced or unbalanced feedlines and single-wire and ladder lines at the full legal power limit of your station. With its continuously variable inductor, this tuner guarantees precise antenna matching from 1.8 to 30 MHz, including the MARS frequencies. A convenient front panel counter lets you quickly set the inductor to previously calibrated frequencies.

With a single switch you can select a dummy load or any of three permanently connected antennas, including a long-wire antenna. You'll never have to connect and disconnect feed lines to load your transmitter into the dummy load again!

Dual wattmeters read both forward and reflected average power, in two ranges, for more efficient low band operation. The wattmeter section of the antenna tuner installs directly into your transmission line to measure the power on all frequencies between 1.8 and 30 MHz. It measures output up to 200/2000 watts in the forward direction and up to 50/500 watts reflected. SWR indications on the reflected meter provide direct readings from 1:1 to 3:1.

The silver-plated straps and roller contact assembly minimize RF loss at high frequencies. And the large feed-through insulators withstand high-voltage RF. Dimensions are 5 3/4" H x 14 1/2" W x 13 7/8" D.

Kit SA-2060-A (20 lbs.)
~~$399.95~~ **NOW $299.95**

Specifications: Frequency Range (continuous tuning): 1.8 to 30 MHz. INPUT POWER CAPABILITY: SSB: 2000 watts (peak). CW: 1000 watts. Input Impedance: 50 ohms. Output Impedance: Wide range. Balanced to Unbalanced Transformation: 4:1 balun. Meter Functions: Forward and Reflected average power, and SWR. METER RANGES: Forward (2 ranges): Low: 0-200 watts. High: 0-2000 watts. Reflected (3 scales): Low: 0-50 watts. High: 0-500 watts. SWR: 1:1 to 3:1. WATTMETER ACCURACY (full scale): 200 W and 2000 W (FWD), 500 W (REF): ±5% (AVG). 50 W (REF): ±7.5% (AVG). Insertion SWR: Less than 1.1:1.



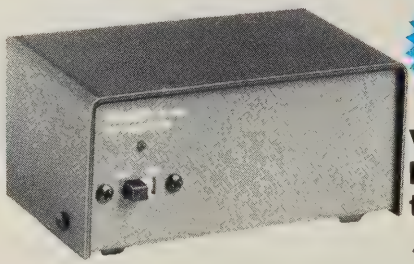
Antenna noise bridge

SKILL LEVEL 1 Reveal the cause of any mismatch between station transmitter and antenna with the Heathkit Antenna Noise Bridge. A tone-modulated broadband noise signal is generated in the bridge and coupled to an impedance bridge. Then, using your station receiver as an indicator, the impedance bridge measures the resistive and reactive components of your antennas. Use the noise bridge also to preset an antenna tuner for faster tune-ups, tune a quarter-wave transmission line and measure the value of unknown capacitors and inductors.

A front panel LED indicates power on, front panel controls give direct readout of resistive and reactive characteristics of the antenna being tested. The rear panel includes external power jack and coaxial connectors for receiver and unknown antenna connections. Requires 9V battery or PS-2350 Battery Eliminator, listed at right. Dimensions are 2 1/4" H x 5 1/8" H x 5" D.

Kit HD-1422-A (2 lbs.) ~~$59.95~~ **NOW $39.95**

Specifications: Resistance: approx. 0-200 Ω. Capacitance: ±60 pF. Operating Range: 1 MHz–30 MHz.



20% OFF!

VLF converter lets you tune in the world

SKILL LEVEL 1 Listen to the U.S. Submarine Fleet, European broadcasts and other distant transmissions below the standard AM band. The VLF Converter installs in your receiver antenna line to let you listen to the 10 to 500 kHz band from 3.510 to 4.010 MHz on your CW receiver. The converter contains a local oscillator generating a 3.5 MHz signal that, when mixed with the incoming VLF frequencies on your antenna, produces an RF signal that can be heard on any CW receiver capable of tuning 3.510 to 4.010 MHz. Requires 9V battery or PS-2350 Battery Eliminator, listed below, or any source of DC power, 8.5 to 14 volts. The VLF Converter measures only 5 1/8" H x 5 1/8" W x 2 1/4" D.

Kit HD-1420 (2 lbs.)
~~$49.95~~ **NOW $39.95 Limited Quantities!**

Battery Eliminator Assembled PS-2350 (1 lb.) **$7.95**

26% OFF!

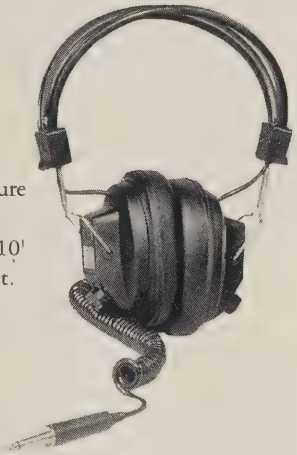
Heath cantenna dummy load



SKILL LEVEL 1 Eliminate unnecessary QRM during tune-up and minimize mistakes while performing hot gear maintenance or alignment. Cantenna handles 1 kW of RF with VSWRs less than 1.5:1 up to 450 MHz. Requires 1 gallon mineral or transformer oil.

Kit HN-31-A (3 lbs.)
~~$26.95~~ **NOW $19.95**

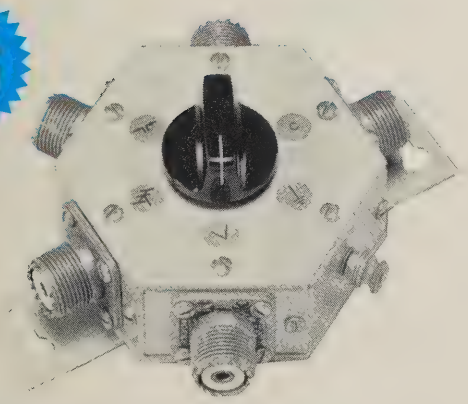
Closed-back headphones



Comfortable 8-ohm headphones feature 40 to 15,000 Hz frequency range, 2 1/4" speakers, individual volume controls and 10' coiled cord. Easily adjustable for precise fit.

Assembled HDP-1396 (2 lbs.)
~~$19.95~~ **NOW $12.95**

23% OFF!



Coaxial switch

SKILL LEVEL 1 Manually route one RF source to any one of several antennas or loads, while grounding all outputs not in use. Switch from up to four antennas or pieces of interconnecting equipment. The unit handles 2 kW PEP with maximum 1.1:1 SWR to 250 MHz. Mounting brackets are built-in. Mount width: 4 1/4".

Kit HD-1234 (1 lb.) ~~$29.95~~ **NOW $22.95**

23% OFF!

Revolutionize your Morse code with the programmable μmatic memory keyer

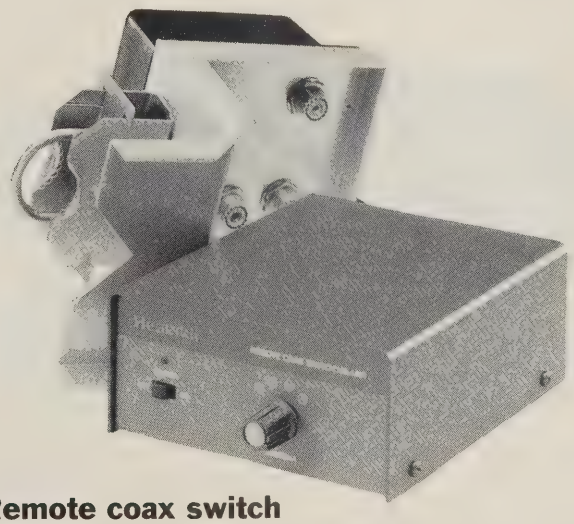


SKILL LEVEL 2 Add programmable excellence to all your Morse code. Patented command strings let you store text in buffers; select speed, weight, spacing or message repeat count for each; and link them together in any sequence. A special editing feature lets you correct programming errors. Enter text and send with any setting you wish. Text can be added into a buffer message being sent. CMOS memory with battery backup retains the buffer contents and last selected setting when the keyer is without power. Dimensions are 1 5/8" H x 4 1/8" W x 6" D.

Kit SA-5010-A (3 lbs.) ~~$129.95~~ **NOW $99.95**

120 VAC Plug-in Power Supply
Assembled PS-5012 (1 lb.) **$15.95**

Specifications: Speed Range: 1 to 99 wpm. Character/Word Spacing: Less than or equal to speed setting. Number of Buffers: 1 to 10. Buffer Size: 240 characters plus commands. Weighting: Normal plus 5 light and 5 heavy settings. Auto Message Repeat: 0 to 9 (sent 1 to 10 times). Keyer Output: Solid State: +250 volts @ 100 mA; –200 volts @ 40 mA. Sidetone: Approximately 300 to 1500 Hz, adjustable. Power: External transformer (optional) or 11 to 16 VDC @ 200 mA.



Remote coax switch

SKILL LEVEL 1 Switch antennas from inside your station with the Remote Coax Switch. Remote and indoor control units connect through your coax cable to eliminate multiconductor control cable. Tower- or mast-mounted remote operates up to four antennas. Handles 2000 watts PEP and has a VSWR of 1.15: or less. Frequency range is from 1.8 to 54 MHz with impedance of 50 to 70 ohms and loss at 54 MHz of less than 0.2 dB. Uses 120 VAC. Control: 2 5/8" H x 5 1/2" W x 7 1/2" D. Remote: 7 1/8" H x 8 3/8" W x 4 1/2" D.

Kit HD-1481 (5 lbs.)
~~$79.95~~ **NOW $64.95 Limited Quantities!**

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570



Link up with the Heath pocket packet TNC

Packet radio is the fastest-growing segment of amateur radio today. With the Heath Pocket Packet TNC you get the latest and smallest TNC available, and it's TNC-2 compatible.

If your handheld transceiver, like most, uses a mini phone jack for speaker output and a sub-mini for microphone, in about 20 seconds you can connect your transceiver to the pocket packet unit with the two shielded cables supplied. To connect the unit to your base or mobile transceiver, another cable is also supplied.

The HK-21 even includes a built-in mini bulletin board so you and your friends can leave messages for each other. They access your station with a Connect request and automatically get a sign-on message. Bulletin board commands include the following: W(rite) writes a message to a specific call; R(ead) reads a message sent to your call; F(iles) lists the last ten–or all–messages in the system, plus the date each message was left; M(ine) lists only messages left for you. Additional commands are H(elp) or ?, K(ill) and B(ye).

The HK-21 requires a 9 to 13.8V supply @ 40 mA nominal current. Front panel switches disable RS-232 and turn off LEDs for maximum power savings when used as a remote site digi. You can connect it to your station's 12 volt supply or order PS-2350 120 VAC Battery Eliminator (below).

The optional HKA-21-1 battery pack fits inside the unit, powering it for hours. And it recharges from the 12 volt DC jack on the pocket packet unit.

Assembled HK-21 (2 lbs.) ~~**$199.95**~~ **NOW $179.95**

Accessories:

Optional Battery Pack
Assembled HKA-21-1 (1 lb.) ~~**$17.95**~~ **NOW $14.95**

Battery Eliminator Assembled PS-2350 (1 lb.) **$7.95**



28% OFF!

PackKit multi-mode TNC includes mailbox board

SKILL LEVEL 2 The Heathkit PackKit multi-mode TNC now includes our mailbox board, a $49.95 value, absolutely free. This versatile board lets you operate your PackKit as a personal packet mailbox or local BBS. Feature packed, our TNC also lets you work CW at speeds you never dreamed of and gets you on AMTOR, ASCII, RTTY and NAVTEX. With the addition of a graphics printer, you can even print weather facsimile pictures.

A unique Signal command causes PackKit to determine correct RTTY, ASCII or AMTOR mode for the signal you're listening to and presets baud rate and mode. It even inverts the signal if necessary. Use the Opmode command to display full details of your current operating mode without having to change mode.

The unit supports all common baud rates for Baudot RTTY and ASCII, and CW from 5 to 99 WPM. Radio link rates are supported to 1200 baud (9600 with external modem) and computer data rates to 9600 baud. What's more, no special software is needed. Use with any modem communication package made to run on your computer or order Ham-Pak software (below). You can use the HK-232-B with computers or terminals using an RS-232 industry standard serial port.

For flexibility, PackKit has two independent, selectable rear-panel connection ports that provide interchangeable HF or VHF operation. All you need to do is connect your radio's PTT line, speaker output and microphone input.

Includes manual with hookup connections for most popular HF and VHF radios. Operates on 12 VDC at 750-800 mA with 10% ripple or less. 2 1/2" H x 8 1/4" W x 11" D.

Kit HK-232-B (5 lbs.) ~~**$279.95**~~ **NOW $199.95**

Accessories:

Ham-Pak Communications Software Program
for use with Heath/Zenith, IBM PCs and compatibles.
HKA-232-2 (1 lb.) ~~**$19.95**~~ **NOW $14.95**

Technical Manual includes alignment, troubleshooting, circuit board layout and detailed circuit description.
HKA-232-3 (2 lbs.) ~~**$24.95**~~ **NOW $9.95**

Power Supply 12V DC 1 Amp requires 120 VAC.
Assembled HKA-232-4 (4 lbs.)
~~**$19.95**~~ **NOW $16.95 Limited Quantities!**

Mailbox Board turns your HK-232 or HK-232-A into a personal packet mailbox. Also makes a great local BBS.
Assembled HKA-232-5 (1 lb.) **$69.95**



Heathkit deluxe QRP CW transceiver includes FREE Band Pack!

SKILL LEVEL 3 The Heathkit HW-9 is a compact 80 through 10 meter HF transceiver created with the avid low-power CW operator in mind. Designed to cover the lower 250 kHz of the 80, 40, 20 and 15 meter amateur bands, the HW-9 can also cover the 30, 17 and 12 meter WARC bands and the lower 250 kHz of the 10 meter band with the HWA-9 Band Pack (FREE with HW-9 Purchase).

Broadband design means you no longer need to tune circuits within a band. Just turn the band switch and select the desired frequency. The wideband front end uses a double- balanced mixer and 4-pole crystal filter to handle wide dynamic range signals with ease and to eliminate the customary RF amplifier in the receiver section.

The HW-9 uses a single conversion in the main signal path to maintain superior image rejection. In addition, a balanced product detector followed by an active audio filter provides outstanding performance. And, Receiver Incremental Tuning (RIT) lets you tune the receiver 1 kHz above or below the transmit frequency.

Microelectronic circuits reduce transceiver weight, while providing a level of performance you wouldn't expect at this price. Features continuously variable RF power output up to four watts, relative signal/power strength meter and AGC circuits.

Rugged and lightweight, the HW-9 is ideal for portable operation. Power with batteries, lighter socket, solar photovoltaic array or by 120 VAC with the PSA-9 Power Supply (below). Dimensions are 4 1/4" H x 9 1/4" W x 8 1/2" D.

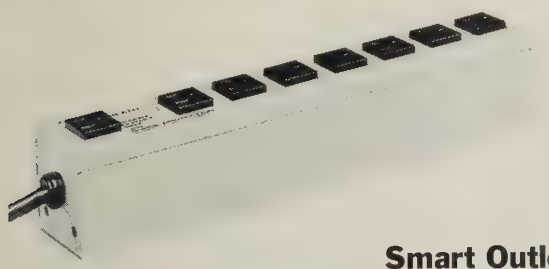
Kit HW-9 (8 lbs.) **$249.95**

Accessories:

Band Pack expands HW-9 transmission and reception capabilities from 4 to 8 amateur bands. Provides full coverage on all amateur bands from 80 through 10 meters.
Kit HWA-9 (1 lb.) **$25.95 or FREE with purchase of HW-9**

Power Supply 12.6-volt, 1-amp, voltage regulated.
Kit PSA-9 (4 lbs.) **$39.95**

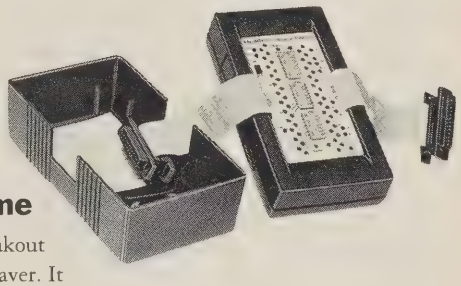
Specifications: TRANSMITTER: RF Output Power: 4 watts, except 3 watts on 10 meters. Transmitter Frequency Offset: App. 700 Hz. Antenna Load Impedance: At least 90% of rated power with less than 2:1 SWR. Protected against high SWR. Harmonic & Spurious Radiation: –35 dB & –40 dB maximum, at rated output. T/R Operation: CW, full break-in. RECEIVER: Sensitivity: 0.2 µV for readable signal; 0.5 µV or less for 10 dB S+N/N. Selectivity: Wide, 1 kHz max. @ 6 dB; Narrow, 250 Hz @ 6 dB. Dynamic Range: 85 dB. Image & IF Rejection: 60 dB, min. Audio Hum Noise: –60 dB. Audio Output: 1 watt into 8Ω.



Smart Outlet Box

SKILL LEVEL 1 The Smart Outlet Box isn't just another power strip. When you power on a device plugged into the smart outlet box's current-sensing control outlet, all the equipment plugged into the other outlets comes on at the same time. It's perfect for your entertainment center, work bench or computer system. Simply plug the main unit into the control outlet and the other components into the remaining outlets. It features surge protection and 10-amp capacity.

Kit GD-1495 (5 lbs.) **$59.95**



Breakout box saves setup time

SKILL LEVEL 1 The Heathkit Breakout Box is a valuable time saver. It provides you with access to all 25 lines of RS-232C cable linking computer system devices. Twelve LEDs monitor key signal lines while 23 lines can be switch disabled, then cross connected. Built-in dual DTE and DCE gender connectors eliminate the need for adapter cables and connectors, and two AA batteries power the line monitoring LEDs, though they're not needed for the unit to operate. Five jumper wires are included. Dimensions are 2 3/8" H x 3 1/2" W x 6 1/4" L.

Kit PMK-130-H (2 lbs.) **$69.95 Limited Quantities!**

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570



Big savings on accessories for 100-watt HF all-mode transceiver!

This feature-packed transceiver delivers 100W of PEP output on all nine HF bands, with 100 kHz-30 MHz general coverage reception.

An SSB/CW/AM and optional FM transceiver, the SB-1400 features dual VFOs along with 20 memory channels. These channels can store mode and skip-scan status allowing for auto resume scanning of selectable memories, controlled from the microphone up/down keys. In addition, you can store independent transmit and receive frequencies on 18 of the memories for easy recall of split-frequency operations.

Behind the SB-1400's convenient front panel layout are many standard features including narrowband (500 Hz) CW and wideband (6 kHz) AM IF filters, a switchable 20dB receiver attenuator, a clarifier and a noise blanker for better reception under harsh conditions. Cooled by an internal fan, the transmitter power amplifier is enclosed in its own diecast aluminum heat-sink chamber, which allows for full power operation of FM and Packet, RTTY, AMTOR and SSTV.

Tuning is a snap with the user-selectable coarse and fine tuning steps provided in each mode: 25Hz and 2.5kHz for SSB and CW, 1kHz and 100Hz for AM, and 5 and 12.5kHz for FM with an optional FM Module.

Assembled SB-1400 (9 lbs.) ~~$799.95~~ SOLD OUT

SAVE 42%

Speaker/Power Supply delivers full 20-amp output for 30 minutes on and 30 minutes off. Other features include thermally switched quiet cooling fan; high quality 3-watt, 4-ohm speaker; 13.5 VDC at 20 amps; and 117 VAC, 50/60 Hz operation. UL listed.

Assembled SBA-1400-4 (17 lbs.)
~~$329.95~~ **NOW $199.95**

Accessories:

Mobile Bracket mounts above or below vehicle dash.

Assembled SBA-1400-3 (1 lb.) ~~$25.95~~ **NOW $12.95**

Switching Relay protects your rig from transient high voltage. Use if switching voltages are greater than 150 volts or current exceeds 1.5 A. Features an outboard relay for non-QSK linear amplifiers. Maximum switching voltage is 250V.

Assembled SBA-1400-5 (1 lb.) ~~$17.95~~ **NOW $9.95**

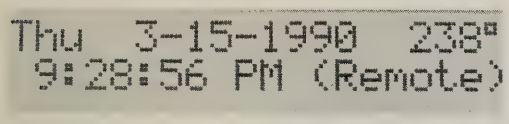
Interfacing Software allows you to operate your SB-1400 from an IBM or compatible computer. Screen layout is similar to transceiver display, and all memory contents are shown for easy review and selection. Features flexible QSY function, large frequency display, Heath HV-2000 Voice Card support and transient or memory-resident operation. Requires TTL to RS-232 interface cable (sold below).

SBA-1400-7 (1 lb.) ~~$39.95~~ **NOW $9.95**

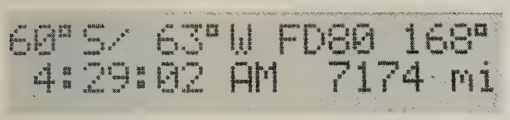
TTL to RS-232 Interface Cable connects SB-1400 to a computer with a standard RS-232 serial port.

SBA-1400-8 (1 lb.) ~~$49.95~~ **NOW $29.95**

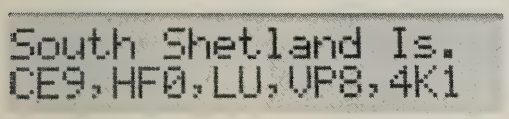
Specifications: RECEIVER: Sensitivity: SSB & CW: 0.25 µV above 1.5 MHz, 0.5 µV (500kHz-1.5MHz); AM: 1 µV above 1.5 MHz; FM: (option) 0.7 µV for 12dB SINAD above 28 MHz. IF Frequency: 47.055, 8.215 MHz (and 455 kHz FM triple conversion). Image Rejection: >70dB above 1.5 MHz. IF Rejection: >60dB above 1.5 MHz. Selectivity: SSB; CW(W); AM(N), 2.2 kHz at –6dB, 5 kHz at –60dB; CW(N), 500 Hz at –6dB, 1.8 kHz at –60dB. TRANSMITTER: Amateur Bands: 160m, 80m, 40m, 30m, 20m, 17m, 15m, 12m



In standby mode, IntelliRotor's 40-character LCD display shows local day, date, time and current bearing.



Push one button and read selected country's latitude, longitude, grid square, bearing, time and distance.



View names and possible prefixes for any of over 400 countries in the permanent database.

IntelliRotor makes beam rotation automatic!

SKILL LEVEL 2

You know the old routine. Find the location you want to work on a map or chart, calculate the bearing, rotate the beam, double-check the bearing. Want to work another location? Repeat the procedure all over again.

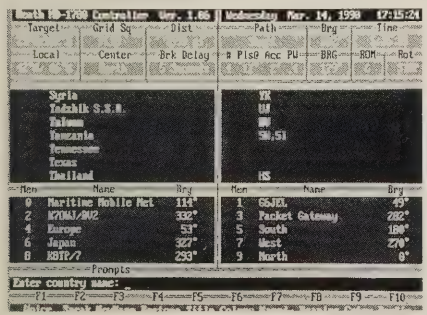
SAVE!

IntelliRotor puts an end to the hassle of rotating your beam antenna manually. With just a few keystrokes, IntelliRotor lets you choose from a permanent database of over 400 countries, including their coordinates and time zones, or lets you enter and store your own.

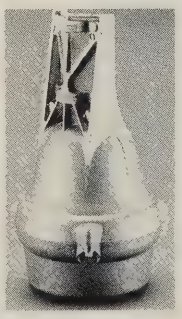
In its default mode, IntelliRotor's 40-character LCD display shows the current time, date, day of the week and bearing to 1°. Bearing is also displayed on a compass rose of 16 LEDs, with a resolution of 32 points, or 11.25 degrees. In addition, the display shows country names, a prefix list, target bearing, short/long path distance, latitude and longitude, grid square and the time in target country.

Use the IntelliRotor's built-in QWERTY-style keyboard to enter any of these: the name of the country (or just the first few letters), a prefix (or partial prefix), latitude and longitude, grid square or the bearing in degrees. With a few keystrokes, IntelliRotor immediately starts rotating your antenna to the country you want.

Scan through the built-in database to obtain information before you rotate the antenna, or customize the list to make your beam selections even more convenient and precise. IntelliRotor lets you edit any entry or enter up to ten of your own named and detailed bearings for later use. Of course, you can always rotate the beam manually, with a constant visual update on the current angle. And sight-impaired users can choose to have IntelliRotor annunciate current bearings in Morse code at 20 WPM.



Included software lets you operate the controller from a PC-compatible computer, complete with screen displays.



Rugged Ham IV Rotator works great with the IntelliRotor.



Compact controller fits almost anywhere–even mounts on a wall. Power supply (inset) can be placed out of sight, up to six feet away.

The IntelliRotor features superior rotor control with motor pulsing, automatic braking, and initial back-rotating to protect the brake from locking due to wind-loading. IntelliRotor even monitors the rotator's duty cycle to make sure it can't overheat.

Since the IntelliRotor's compact controller module is linked to a separate power unit that can be placed out of sight, you save valuable table or shelf space. Or, use the unit's serial port and included software (supplied on both 5.25" and 3.5" disks) to control the IntelliRotor from a PC-compatible computer, either as a transient program or pop-up. The program shows all the information from the controller's display, and more, on your computer's screen.

Compatible with all Ham-M (series 3, 4, 5 and 6), Ham-II, Ham-III, Ham IV, T²X, CDE TR-44, CD-45 (series 2) and M2 rotators. Or order with cable and new rotator mechanism below.

Kit HD-1780 (6 lbs.) ~~**$279.95**~~ **NOW $239.95**

Assembled HDW-1780 (11 lbs.) ~~**$349.95**~~ **NOW $299.95**

Configurations:

HDS-1780-1 Kit IntelliRotor with TELEX Ham IV Rotator* and 125' of cable. (28 lbs.) ~~**$629.95**~~ **NOW $539.95**

HDS-1780-2 Kit IntelliRotor with TELEX Ham IV Rotator* and 200' of cable. (29 lbs.) ~~**$719.95**~~ **NOW $629.95**

HDS-1780-3 Fully assembled IntelliRotor with TELEX Ham IV Rotator* and 125' of cable. (33 lbs.) ~~**$699.95**~~ **NOW $599.95**

Accessories:

125' Standard Rotator Cable
Assembled HDA-1780-1 (4 lbs.) **$69.95**

200' Heavy Duty Rotator Cable
Assembled HDA-1780-2 (15 lbs.) **$129.95**

Telex Ham IV Rotator, manual and hardware
(control box not included)
Assembled HDA-1780-3 (18 lbs.) ~~**$319.95**~~ **NOW $269.95**

*Telex®/hy-gain® honor their rotator warranties when their products are used with the IntelliRotor.

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570

5 1/4" H x 2 3/16" W x 1 1/4" D



SAVE $250

Mini-deluxe transceivers

Our 2 meter and 450 MHz Mini-Deluxe transceivers provide impressive capabilities in a compact size.

The HW-2-M and HW-4-M boast a highly sensitive receiver section at 0.158 µV for 12 dB SINAD. True broadband transceivers, the Mini-Deluxe HTs retain their excellent receiver sensitivity and power output even outside the amateur band.* You can actually achieve a full 5 watt output with the optional high-power battery pack.

Other features include 21 memory frequencies (20 + 1 call), rotary channel selector, hi/med/low power, Auto-Power Off, dual frequency watch, 43 mA RX squelched, 13 mA RX battery save, DTMF, LCD display, duplex operation, battery saver standby mode and PTT lockout. Both models include a 7.2V, 700 mA/h battery and charger.

2 Meter HT
Assembled HW-2-M (2 lbs.) ~~$449.95~~ **NOW $199.95**

450 MHz HT
Assembled HW-4-M (2 lbs.) ~~$469.95~~ **NOW $209.95**

Accessories:

CTCSS Unit Assembled HWA-302 (1 lb.)
~~$64.95~~ **NOW $49.95**

Compact NiCd Battery 7.2 V, 400 mA/h.
Assembled HWA-305 (1 lb.) ~~$64.95~~ **NOW $49.95**

Standard NiCd Battery 7.2 V, 700 mA/h.
Assembled HWA-310 (1 lb.) ~~$59.95~~ **NOW $44.95**

High-Power NiCd Battery 12 V, 600 mA/h. Requires HWA-340 Quick Charger (this page).
Assembled HWA-320 (1 lb.) ~~$89.95~~ **NOW $59.95**

Long-Life NiCd Battery 7.2 V, 1000 mA/h.
Assembled HWA-325 (1 lb.) ~~$79.95~~ **NOW $54.95**

Small Soft Case
Assembled HWA-345 (1 lb.) ~~$14.95~~ **NOW $12.95**

Regular Soft Case
Assembled HWA-350 (1 lb.) ~~$16.95~~ **NOW $14.95**

Large Soft Case
Assembled HWA-355 (1 lb.) ~~$18.95~~ **NOW $16.95**

Specifications: GENERAL: Frequency*: 2M/2P: 144-147.995 MHz. 4M/4P: 438-449.995 MHz. Operating Voltage: 2M/4M: 5-16 VDC. 2P/4P: 5.5-16 VDC. Dimensions: 2M/4M: 5 1/4" H x 2 3/16" W x 1 1/4" D. 2P/4P: 4 3/8" H x 2 1/4" W x 1 3/16" D. Weight: 2M/4M: 10.6 oz. 2P/4P: 12.3 oz. TRANSMITTER: Output Power: 5 W (hi), 2.5 W (med), 0.35 W (low) on 2M/4M, 0.3 W (low) on 2P/4P. Spurious Signal Ratio: –60 dB. RECEIVER: Sensitivity: 0.158 µV. Squelch Sensitivity: 2M/4M: 0.1 µV. 2P/4P: 0.125 µV. Note: Specifications are within amateur band.

* May be modified for out-of-amateur-band operation for MARS, CAP and embassy operators. Call 616-982-3296 for full information. Proof of participation required.

4 3/8" H x 2 1/4" W x 1 3/16" D



SAVE $230

Micro-deluxe transceivers

Designed with the user in mind, our 2 meter and 450 MHz Micro-Deluxe transceivers use batteries that hinge onto the back of the units instead of adding to their length. This arrangement lets the HTs retain their same basic form even with the largest capacity batteries.

You'll appreciate the sensitive receiver section at 0.158 µV for 12 dB SINAD. The HW-2-P also features true broadband reception for sensitive out-of-band operation.* And with the optional high-power battery pack, a full 5 watt output is possible on both HTs.

Standard features include 21 memory channels (20 + 1 call), rotary channel selector, DTMF, LCD display, duplex operation, Auto-Power Off, Auto-On Timer, one button open squelch, PTT lockout, hi/med/lo power, 9-step battery saver, and a 7.2V, 700 mA/h battery and charger.

2 Meter HT
Assembled HW-2-P (2 lbs.) ~~$429.95~~ **NOW $199.95**

450 MHz HT (2 lbs.)
Assembled HW-4-P ~~$449.95~~ **NOW $209.95**

Accessories:

CTCSS Unit Assembled HWA-402 (1 lb.) ~~$64.95~~ **NOW $49.95**

Compact NiCd Battery 7.2 V, 400 mA/h.
Assembled HWA-405 (1 lb.) ~~$64.95~~ **NOW $49.95**

Standard NiCd Battery 7.2 V, 700 mA/h.
Assembled HWA-410 (1 lb.) ~~$59.95~~ **NOW $44.95**

High-Power NiCd Battery 12 V, 600 mA/h. Requires HWA-340 Quick Charger (this page).
Assembled HWA-420 (1 lb.) ~~$89.95~~ **NOW $59.95**

Long-Life NiCd Battery 7.2 V, 1200 mA/h.
Assembled HWA-425 (1 lb.) ~~$79.95~~ **NOW $54.95**

Carrying Case
Assembled HWA-450 (1 lb.) ~~$17.95~~ **NOW $15.95**

More accessories for Mini-Deluxe and Micro-Deluxe HTs:

Handheld Microphone
Assembled HWA-180 (1 lb.) **$34.95 Limited Quantities!**

Headset Assembled HWA-190 (1 lb.)
$32.95 Limited Quantities!

Wall Charger Plugs directly into a wall outlet.
Assembled HWA-330 (1 lb.) ~~$16.95~~ **NOW $14.95**

Automatic Peak Detecting Quick Charger charges battery in 1 hour then switches to trickle charge. Auto shut-off.
Assembled HWA-340 (4 lbs.) ~~$119.95~~ **NOW $79.95**

FREE TTP and CTCSS with purchase of HWS-4 HT

AN $82.90 VALUE FREE!

Put more fun and enjoyment into portable communications with this compact 450 MHz transceiver. Besides power and easy one-handed operation, it offers many impressive features with options.

One of these features is the double-conversion superheterodyne receiver section that's extremely sensitive at .158 µV for 12 dB SINAD within amateur bands. Plus thumbwheel tuning, hi/low power operation, squelch, repeater ± offsets, and optional CTCSS and DTMF capabilities. Includes one HWA-110 rechargeable battery pack and one HWA-130 wall charger.

Assembled HWS-4 (2 lbs.)
~~$209.95~~ **NOW $169.95**

Accessories:

Rechargeable NiCd Battery Pack
for normal wattage output operation.
Assembled HWA-110 (1 lb.) ~~$49.95~~ **NOW $39.95**

120 VAC Wall Charger
Assembled HWA-130 (1 lb.) ~~$13.95~~ **NOW $11.95**

120 VAC Desktop Quick-Charger
Assembled HWA-140 (2 lbs.) ~~$39.95~~ **NOW $29.95**

Microphone Speaker
Assembled HWA-180 (1 lb.) **$34.95 Limited Quantities!**

CTCSS Unit includes programmable DIP switches for any tone frequency.
Assembled HWA-220 (1 lb.) **$52.95 or FREE with purchase of HWS-4!**

Touch Tone Encoder
Assembled HWA-230 (1 lb.) **$29.95 or FREE with purchase of HWS-4!**

Specifications: GENERAL: Frequency: 2: 144-147.995 MHz. 4: 440-449.995 MHz. Emission Type: FM. Microphone Input Impedance: 600 ohm. Speaker Impedance: 8 ohm. Operating Voltage: 5.5-11 VDC. Antenna Impedance: 50 ohm. Power Supply: 9 VDC (nom.) Dimensions: 5.2"H x 2.4"W x 1.3"D. Weight: 14.3 ozs. TRANSMITTER: Output Power: 3 W (hi), 400 mW (lo). Spurious Signal: -60 dB. Max. Deviation: ±5 kHz. Modulation: Reactance. Built-in Microphone: Electret condenser type. RECEIVER: Sensitivity: 0.158 µV. Squelch Sensitivity: 0.1 µV. Circuitry: Double conversion superheterodyne. Selectivity: -60 dB. Audio Output: 400 mW at 8 ohms.



Multi-mode active audio filter

SKILL LEVEL 2 Solve overmodulation splatter, partially overlapped sideband signals and more with the Heathkit Active Audio Filter. The HD-1418 consists of five-pole (section) high-pass and low-pass filters, plus a two-pole notch/peak filter. You can move these filters through a 300 to 2500 Hz audio frequency band to help you select or reject certain frequency components of signals you tune in with your shortwave equipment.

Versatile power requirements make the Active Audio Filter usable almost anywhere. Just supply 7-13.5 volts AC or 9-18 volts DC. For AC power operation, purchase the 120 VAC Plug-in Power Supply, PS-5012, sold below. Dimensions are 1 7/8" H x 8 7/8" W x 6 5/8" D.



Kit HD-1418-A (3 lbs.) ~~$89.95~~ **NOW $69.95**

120 VAC Plug-in Power Supply
Assembled PS-5012 (1 lb.) **$15.95**

ORDER TOLL-FREE 24 HOURS A DAY 1-800-253-0570



SAVE $150

Heath's advanced dual-band transceiver

The HW-24-HT VHF/UHF Dual-Band HT packs world-class capabilities into an amazingly compact size.

First, the receiver's sensitivity spec is an unbeatable 0.158 µV for 12 dB SINAD. That's important since handheld units are usually operated from rubber duck antennas.

Second, the Heath Dual-Band HT offers extremely broad frequency coverage: from 130 MHz to 169.995 MHz and from 360 MHz to 469.995 MHz (except 400–418 MHz) on receive.

Finally, Heath HTs in general require less power on receive and far less power on transmit. As a result, battery life is substantially longer than with other units. At full 5-watts transmit output, the HW-24-HT requires only 1000 mA VHF or 1300 mA UHF. Compare this with the major competitor at 2000 mA VHF and 2200 mA UHF for the same power to the antenna.

Other features include 22 memory frequencies (20 memories + 2 call memories, and the call memories can be your favorite repeater if you wish). Plus a full-function keyboard you can use to enter new frequencies either directly or with a rotary frequency selector that doubles as a quick channel selector in the memory mode.

Heath HTs have more scanning modes, too. Scan the first 10 memories or the last 10 or scan all 20 memories. Scan a 1-MHz segment of the band, or scan the entire band. Double the number of scanning modes, because in any mode you can select Pause Scan or Busy Scan. Pause Scan stops on an active channel, but resumes after a few seconds so you can hear everything that's going on. Busy Scan stops on an active channel and holds until the frequency becomes clear. Dual Watch lets you monitor two frequencies at the same time; the HT holds on the alternate channel as soon as it becomes busy. Great for listening to two repeaters at the same time, especially when you don't want to miss anything on one of them.

The HW-24-HT includes a full 16-key DTMF keypad plus VHF/UHF full-duplex operation that allows full-duplex telephone calls through equipped repeaters.

And if all this weren't enough, we've even lowered the price on the HWS-24-HT system.

Assembled HWS-24-HT includes rechargeable battery, plug-in power supply, and extra empty battery shell (4 lbs.)
~~$469.95~~ **NOW $319.95**

Accessories:

Rechargeable NiCad Battery Pack for normal wattage operation.
Assembled HWA-110 (1 lb.) ~~$49.95~~ **NOW $39.95**

120 VAC Wall Charger
Assembled HWA-130 (1 lb.) ~~$13.95~~ **NOW $11.95**

120 VAC Desktop Quick-Charger
Assembled HWA-140 (2 lbs.) ~~$39.95~~ **NOW $29.95**

Microphone Speaker
Assembled HWA-180 (1 lb.) **$34.95 Limited Quantities!**

Soft Carrying Case
Assembled HWA-250-A (1 lb.)
~~$16.95~~ **NOW $6.95**
or FREE with purchase of HWS-24-HT!

Specifications: Frequency Range*: VHF: 144.000–147.995 MHz. UHF: 438.000–449.995 MHz. Modulation Type: F3. Microphone Input Impedance: 600 Ω. Speaker Impedance: 8 Ω. Antenna Impedance: 50 Ω. Input Voltage: 12–16 VDC (5.5–16 VDC on the HT). Operating Temperature Range: -4° to +140° F. Antenna Connector: BNC type. Memory Channels: 10 per band, VHF and UHF. Scanning: 1-MHz segment, all band, all memory channels, or selected memory channels. Tone Squelch: Simplex/duplex; user selected.

* May be modified for out-of-amateur-band operation for MARS, CAP, and embassy operators. Call 616-982-3296 for full information. Proof of participation required.

Receive VHF and UHF simultaneously with the Heath Twin-Band HT

Our latest handheld transceiver, the HW-24-T, is a true twin-band HT that not only receives simultaneous VHF and UHF but also includes a built-in crossband repeater mode.

The receiver section of this terrific HT has an unbeatable sensitivity at 0.158 µV for 12 dB SINAD, plus superb out-of-band sensitivity and frequency coverage. Receive from 130 MHz to 174.995 MHz on VHF and from 350 MHz to 469.995 MHz on UHF.*

An extremely efficient HT, the Heath Twin-Band requires less power on receive and far less power on transmit. As a result, battery life is substantially increased. At full 5 watts Tx output, the HW-24-T requires only 1100 mA VHF or 1300 mA UHF.

The HW-24-T is packed with 20 memory channels, expandable to 40, with up to 20 offsets and CTCSS tones. The large, easy-to-read, twin display has one side for VHF and one for UHF. You can enter a new frequency directly from the keyboard or via a rotary frequency selector. The rotary selector also doubles as a channel changer in memory mode.

When it comes to scanning modes, nothing beats the Heath Twin-Band HT. You can scan the first 10 memory channels or last 10, scan all 20 memory channels or scan only selected channels. Use selected memory scan to temporarily block out a channel that you still want to keep in memory. Scan a 1 MHz segment of the band, all except 1 MHz, or scan the entire band. Now double the number of scanning modes, because in any mode you can select pause scan or busy scan. Pause scan stops on an active channel and resumes after a few seconds so you hear everything that's going on. Busy scan stops on an active channel and holds until the frequency goes clear. You can also monitor two frequencies at the same time with dual watch, that causes the HT to hold on the alternate channel as soon as it goes busy. It's great for listening to two repeaters at the same time so you won't miss any of the action.

The HW-24-T comes standard with DTMF encoded Code Squelch and Paging modes, both of which are becoming industry standards. These new modes allow selective calling or paging of a compatible HT or group of HTs. DTMF tones are sent automatically at the beginning of each transmission to unlock the desired receiver. Use this feature to call a friend at a busy hamfest or page through a repeater.

Another outstanding feature of this versatile handheld is its unique clone mode that allows you to quickly program a friend's new HW-24-T from your own. All memory contents including frequencies, offsets and CTCSS tones are copied over the air from one HT to the other in less than one minute!

Other features include 16-key DTMF pad; VHF/UHF full-duplex operation; dual LCD display; 6-16 VDC power requirement; auto-power off; PTT lockout; base loaded antenna; one button open squelch; 7.2V, 700 mA/h battery (for 3 watts output) and a wall charger.

Assembled HW-24-T (2 lbs.) **$469.95 Limited Quantities!**

Accessories:

Handheld Microphone Speaker
Assembled HWA-180 (1 lb.) **$34.95**

Compact NiCd Battery 7.2 V, 400 mA/h.
Assembled HWA-305 (1 lb.) ~~$64.95~~ **NOW $49.95**

Standard NiCd Battery 7.2 V, 700 mA/h.
Assembled HWA-310 (1 lb.) ~~$59.95~~ **NOW $44.95**



High-Power NiCd Battery 12 V, 600 mA/h. For 5W output. Requires HWA-340 Quick Charger.
Assembled HWA-320 (1 lb.) ~~$89.95~~ **NOW $59.95**

Long-Life NiCd Battery 7.2 V, 1000 mA/h.
Assembled HWA-325 (1 lb.) ~~$79.95~~ **NOW $54.95**

Wall Charger Plugs directly into a wall outlet.
Assembled HWA-330 (1 lb.) ~~$16.95~~ **NOW $14.95**

Automatic Peak-Detecting Quick Charger Desktop unit charges battery in 1 hour then switches to trickle charge. Auto shut-off. Required for HWA-320 battery, above.
Assembled HWA-340 (4 lbs.) ~~$119.95~~ **NOW $79.95**

Regular Case For transceivers using the HWA-310 Battery Pack.
Assembled HWA-550 (1 lb.) **$16.95 Limited Quantities!**

Large Case For transceivers using the HWA-320 or HWA-325 Battery Pack. Assembled HWA-555 (1 lb.) ~~$19.95~~ **NOW $16.95**

Specifications: GENERAL: Frequency Range Receive*: VHF: 130-174.995 MHz. UHF: 350-469.995 MHz (in 5 kHz steps). Frequency Range Transmit*: VHF: 144-147.995 MHz. UHF: 438-449.995 MHz (in 5 kHz steps). Operating Voltage: 6-16 VDC. Dimensions: 6 3/16" H x 2 3/16" W x 1 1/8" D. Weight: 15.9 oz. (including supplied battery pack). TRAMSMITTER: Output Power: 5 W (hi), 2.5 W (med), 0.35 W (low) using 12 VDC battery. Spurious Signal Ratio: > –60 dB. Max Deviation: ±5 kHz. Modulation: Reactance. RECEIVER: Sensitivity: 0.158 µV for 12 dB SINAD. Squelch Sensitivity: –14 dB. Note: Specifications are within amateur band.

* May be modified for out-of-amateur-band operation for MARS, CAP and embassy operators. Call 616-982-3296 for full information. Proof of participation required

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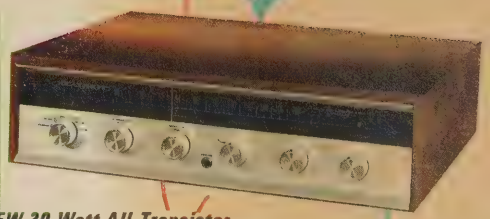
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HEATHKIT®

Christmas 1965



NEW 30 Watt All-Transistor
FM Stereo Receiver, p. 11



NEW Deluxe 80-10 Meter
SSB Transceiver, p. 36

Heathgifts For 1965

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Now 25" & 21" Color TV & 23" B&W TV
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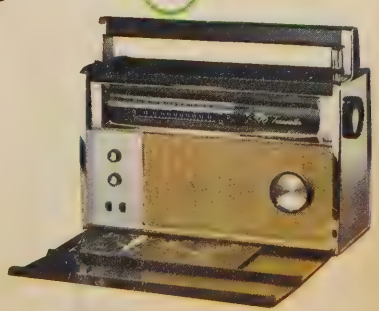
Deluxe Transistor
Electronic Organ, p. 8



NEW 25" Rectangular
Hi-Fi Color TV, p. 3



23 Channel All-Transistor
CB Transceiver, p. 39



NEW 10-Band
All-Transistor Portable, p. 5

HEATH COMPANY
Benton Harbor, Michigan 49023
Catalog Supplement 800/56
Plant Location: St. Joseph, Michigan

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NEWS AND VIEWS OF
HEATHKIT®

Just Released— CONTEST WINNERS!

Congratulations to the 50 winners of the July Flyer "Win A Houseful Of Heathkits" contest. And our sincere thanks to all of you who took the time to enter. Your response was excellent. Here are the lucky names, just received from our judges, R. H. Donnelley Corp.:

1st Prize: H. L. Buchanan*, Nashville, Tenn.

2nd Prize: D. G. Wolf*, Arlington Hts., Ill.

3rd Prizes: R. A. Easton, Evanston, Ill.; C. W. Smith*, Mooresville, Ind.; Mrs. H. C. Trueblood*, Santa Ana, Calif.

4th Prizes: J. L. Hoch, East Aurora, N. Y.; F. R. Jacobs*, Louisville, Ky.; J. R. Heumann, Houston, Tex.; D. L. Kane, Clearwater, Fla.; D. B. Weems*, Neosho, Mo.

5th Prizes: J. H. Bash, Stoneham, Mass.; F. T. Blum, Pac. Palisades, Calif.; R. O. Jaynes, Rocky River, Ohio; Mrs. G. Parenteau, Elk Grove, Calif.; W. A. Bateman, Houston, Tex.; C. D. Conrod, Endwell, N. Y.; C. Manthey*, Toledo, Ohio; Mrs. D. Peters*, Frederick, Okla.; R. L. Cox, Ark. City, Kan.; J. P. McAllister, Blue Bell, Pa.

6th Prizes: J. E. Abele*, Wayland, Mass.; W. J. Beard*, LaPorte, Tex.; L. P. Biese*, Bronx, N. Y.; C. A. Bradley, Avon Lake, Ohio; R. E. Chandos, Santa Barbara, Calif.; M. H. Crick*, Portland, Ore.; J. K. Evans, Texarkana, Tex.; T. Fonte, Kenosha, Wisc.; T. R. Forbes*, Glen Ellyn, Ill.; L. J. Hansen*, La Grange Park, Ill.; M. C. Harrell*, Timberville, Va.; T. F. Hastings*, Stead AFB, Nev.; Mrs. M. R. Hodges*, St. Charles, Mo.; Mrs. E. Ingram, Jr., Compton, Calif.; Mrs. D. Johnson*, Huntington Beach, Calif.; M. V. King, Jr., Honolulu; H. W. Lange, Ridgewood, N. J.; Rev. J. R. Mansfield*, Witakers, N. Car.; A. Martin, N. Massapequa, N. Y.; D. F. Martorana, Ellicott City, Md.; C. A. Moore, Stockbridge, Ga.; J. R. Parkinson, Parma, Ohio; W. Reagh, Los Angeles, Calif.; Lt. H. M. Salley, APO, N. Y.; L. P. Sweany*, Indianapolis, Ind.; L. Tilley, Colo. Springs, Colo.; Mrs. R. E. Tulloss, Fremont, Calif.; G. Wilson*, Seattle, Wash.; W. H. Wirth, Speedway, Ind.; Mrs. J. R. Worthington, Birmingham, Mich.

*Double Prize Winners
(entry accompanied by order)

HEATH MARINE ELECTRONICS GOES "HOLLYWOOD"

When the next James Bond movie, "Thunderball" appears in your town, you'll probably be as surprised at the marine electronics used, as with 007's daring exploits. The film makers chose the complete Heath marine line to equip a rather elaborate boat in the picture. In addition they are also using some GW-52A Walkie-Talkies. "Thunderball" will be a Christmas present to Bond fans.

HEATHKIT GIFT CERTIFICATES

Not sure which Heathkit to give? Give a Heathkit Certificate. They can be made out in any amount and sent direct to the intended recipient, or returned to you for personal giving. Just list the number of Certificates you want on the Heathkit order blank. Be sure to write the name & address of the recipient below each amount, and tell us where certificates should be mailed.

GIFT COUNSELING SERVICE

For help in selecting the proper Heathkit, simply call St. Joseph, Michigan (area 616), 983-3961, or write Heath Co., Benton Harbor, Michigan 49023, Attn: Gift Counsel. Our experts will be glad to help.

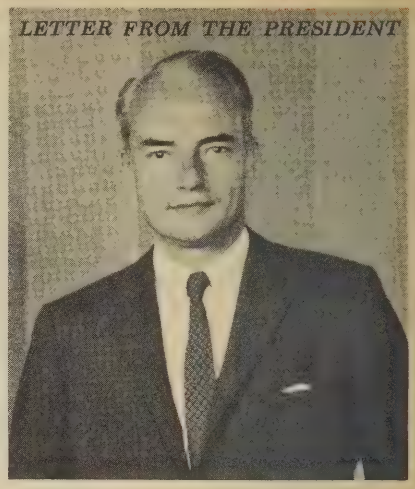
PHONE LAST MINUTE ORDERS

Days, call Area 616, 983-3961
Nights, call Area 616,983-3921
Give all information, we will ship C.O.D.

NEW "NO-MONEY-DOWN" CREDIT TERMS

on orders from $25 to $300. 10% down required on orders from $300.01 to $500. Write for terms on orders over $500. See order blank for details.

LETTER FROM THE PRESIDENT



Dear Friends:

I would like to take this opportunity to explain the current situation with respect to our color TV kits. The demand for color TV receivers on a national basis far exceeds the supply of color tubes. As a result, tube manufacturers have placed their customers on allocation. We see no immediate relief from this situation, and consequently anticipate a continuing shortage of 21" and 25" tubes throughout 1966. In anticipation of a strong demand for our new 25" set for delivery in December, we included a reservation card with our first announcement in the 1966 catalog. As these reservations came back to us we assigned priority numbers, and it is now obvious that we will have committed all our 1965 25" tube allocation by the time you read this. Therefore, we cannot accept any further reservations or orders for the 25" set until our 1966 position on tubes and parts is clarified. I will keep you informed of the situation in my letter which will appear in the next flyer to be published in January 1966.

Since orders for our 21" color set are also running far ahead of expectations, we may be short of 21" tubes by Christmas. Consequently, we are immediately adopting the reservation program for the 21" set. (See opposite page for reservation instructions.) We want you to have all the facts so you can act in your own best interest. Our reply to your reservation card will contain up-to-the-minute availability information.

Thank you for your cooperation.

Sincerely,

C. M. Kirkland, President

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Deluxe Heathkit® Color TV!

HEATHKIT

New 25" Rectangular Color TV . . . With Automatic Degaussing, Choice Of 3-Way Installation, And Many More Innovations For The Finest At Lowest Cost

• Hi-fi 90° rectangular 25" color tube with anti-glare safety glass and "rare earth" phosphor for better "reds", brighter pictures • 27-tube, 10-diode circuit • 25,000 volt regulated picture power • Automatic degaussing & mobile degaussing coil • Exclusive Heath "Magna-shield" covers entire tube for improved color purity • Built-in servicing facilities to adjust & maintain set • Extra B+ boost for improved picture definition • Dynamic pin-cushioning correction circuit eliminates picture edge distortion • Deluxe VHF turret tuner with "memory fine tuning" & long-life nickel silver contacts • 2-speed, transistor UHF tuner • Automatic color control circuit to reduce color fading • New 3-stage IF strip to reduce interference & improve reception • Gated automatic gain control for steady, flutter-free pictures • Circuit breaker protection • New vertical swing-out chassis for easier servicing & installation • 3-way installation . . . wall, custom cabinet or Heath factory-assembled cabinet • Assembles in just 25 hours with all critical circuits prewired & tested • 1-year warranty on picture tube, 90 days on all other parts



GR-25

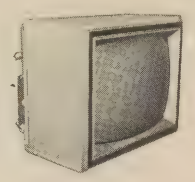
$469.95

(less cabinet)

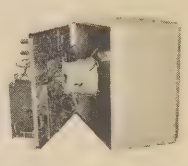
Kit GR-25, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and special extended-range 6" x 9" speaker, 115 lbs. . . . $47 dn., as low as $29 mo. **$469.95**

Assembled GRA-25-1, low cost walnut cabinet, 35 lbs. . . . no money dn., $6 mo. **$59.95**

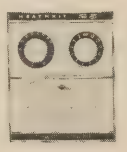
GR-25 SPECIFICATIONS—Picture size: 25", rectangular, approx. 295 sq. inches. **Deflection:** Magnetic 90°. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna input impedance:** 300 ohm balanced, or 75 ohm unbalanced (VHF). **Picture IF carrier frequency:** 45.75 mc. **Sound IF carrier frequency:** 41.25 mc. **Color subcarrier:** 42.17 mc. **Video IF bandpass:** 3.58 mc. **Sound IF frequency:** 4.5 mc. **Tuning range:** VHF channels 2-13, UHF channels 14-82. **Sound cathode follower:** Output impedance; 3 K. Frequency response; ±1 db, 50-15,000 cps. Harmonic distortion, less than 1%. Output voltage; 2 v. **Audio output:** Output impedance, 8 ohms. Output power, 2 watts. Frequency response, ±2 db, 50-15,000 cps. Harmonic distortion, less than 3%. **Power requirements:** 110-130 v., 60 cycle AC, 330 watts. **Wall mounting:** 20" D x 21" H x 26" W inside. Control panel, 6" x 7" x 7".



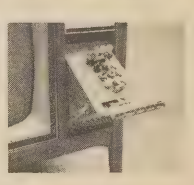
Exclusive Heath Magna - Shield! . . . keeps out external magnetic fields and improves color purity by covering entire tube.



Vertical Swing-Out Chassis! Makes chassis more accessible for servicing and installation.



Universal Main Control Panel! Contains all main controls for more flexible custom installation . . . top, bottom or right side.



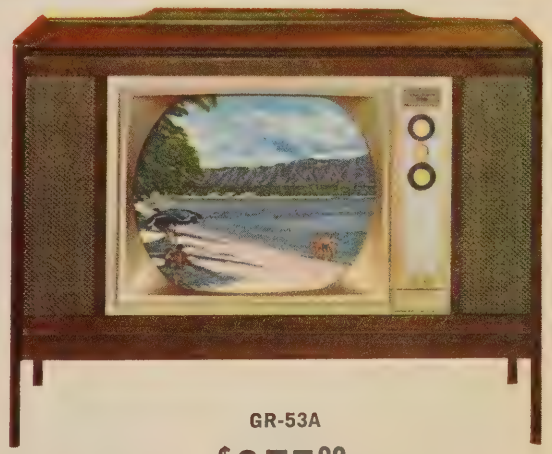
Convergence Control Panel! Front - panel mounted under "tilt - out" speaker grille section for easier, faster picture convergence.

25" COLOR TV SOLD OUT FOR 1965—21" COLOR TV ON RESERVATION

Reservations for the 25" color set have exhausted our 1965 tube allocation—see "President's Letter" opposite page on 1966 status. To reserve the 21" Heathkit color set for future delivery, fill out separate order blank (center of flyer) and enclose $10 deposit.

Heathkit 21" Color TV With Built-In Service Center Plus Many Other Exclusive High Performance Features . . . Assembles In 25 Hours!

• Built-in Service Center to adjust & maintain set • 26-tube, 8-diode circuit • Deluxe Standard-Kollsman VHF tuner with "memory" fine tuning • Transistor UHF tuner • High definition 70° 21" "rare-earth" color tube for brighter reds • Anti-glare bonded safety glass • 24,000 volt regulated picture power • Automatic color control for top color quality • Gated automatic gain control for steady "flutter-free" pictures • Tuners, I.F. and high voltage assemblies factory-built & aligned . . . just simple circuit boards to wire • Line Thermistor for longer tube life • Tubes alone list for over $260 • Transformer operated • Circuit breaker protection • Two hi-fi outputs plus tone control • One-piece metal chassis support for easy set-up & servicing • Mounts in wall, custom cabinet or either Heath cabinet • 1-year warranty on picture tube, 90 days on all other parts



GR-53A

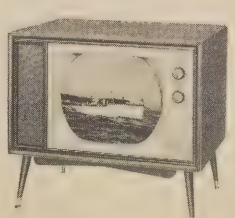
$375.00 (less cabinet)

Kit GR-53A, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and specially shielded, extended range 6" x 9" speaker. 125 lbs. . . . $38 dn., as low as $22 mo. **$375.00**

Assembled GRA-53-7, walnut wood cabinet, 82 lbs. . . . No money down, $11 mo. **$108.00**

Assembled GRA-53-6, walnut finished hardboard cabinet, 51 lbs. . . . No money down, $5 mo. **$46.50**

GR-53A SPECIFICATIONS—Picture size: 21" round, approx. 265 sq. in. **Deflection:** Magnetic 70°. **Focus:** Electro-static. **Convergence:** Magnetic. **Antenna input impedance:** 300 ohm balanced. **Picture IF carrier frequency:** 45.75 mc. **Sound IF carrier frequency:** 41.25 mc. **Color sub-carrier:** 42.17 mc. **Sound IF frequency:** 4.5 mc. **Tuning range:** VHF TV Channels 2-13, UHF 14-83. **Sound cathode follower:** Output impedance; 3K. Frequency response: ±1 db, 50-15,000 cps. Harmonic distortion: less than 1%. Output voltage: 2 V. **Audio output:** Output impedance: 8 ohms. Output power: 2 watts. Frequency response: ±2 db, 50-15,000 cps. Harmonic distortion: Less than 3%. **Power requirements:** 110 V to 130 V, 60 cycle AC, 300 watts. **Wall mounting space required:** 23¾" D x 22¼" H x 28" W.



Economy Cabinet . . . $46.50
Walnut-finished wood & hardboard. Size: 37¾" W x 33¼" H x 26¼" D. Assem. GRA-53-6



Only 21" Color TV You Can Install 3 Ways!

1. In a wall
2. In Your Custom Cabinet
3. In Either Heath Factory-Built Cabinet

HEATHKIT® Deluxe 23″ Black & White TV

Heathkit 23″ Black & White TV— Hi-Fi Picture And Sound . . . Custom Or Cabinet Installation . . . New Lower Price

• UHF & VHF in one unit for all-channel (2-83) reception • 16 tube, 5 diode circuit gives 30 tube performance • High definition 23″ 90° tube with anti-glare bonded safety glass • Spark-gap socket for picture tube protection • Deluxe Nuvistor VHF tuner • Transistor UHF tuner • 20,000 volt picture power • Transformer power supply • Line Circuit Breaker, filament and B+ protection • Line thermistor for long tube life • Gated Automatic Gain Control and Noise Canceller for peak reception • Wide-band circuitry with 5 interference traps • DC restorer • Hi-Fi cathode follower output for hi-fi system • Hi-Fi sound-power output for speaker • Finest parts–tubes alone list over $135 • Easy circuit board construction, wiring harness, and pre-built tuner, IF strip, and hi-voltage sections–finish in 12 hours



GR-22A

$169.00

(less cabinet, mask & speaker)

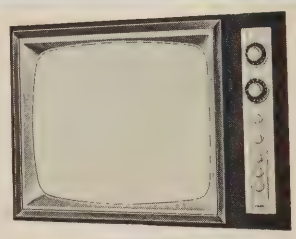
CONSIDERING A NEW TV SET THIS CHRISTMAS? Then consider the Heathkit GR-22A . . . acclaimed by experts and owners alike. Experts like High Fidelity Magazine who wrote: *"the picture is very clear, almost like a glossy photograph."* And owners like Major Charles Leonetti of Tampa, Florida who commented: ". . . *we have browsed in many quarters only to find that the GR-22A far surpasses all commercial TV's, even the well-known name brands on the market*". Isn't this the performance you want in a TV set? This is the performance you get . . . with the GR-22A.

GOES FROM PARTS TO PICTURE IN JUST 12 HOURS. You need no special skills or knowledge to build this set. All critical circuits (tuner, I.F. strip, and high voltage sections) are factory-built and aligned, ready to install. You just mount the sub-assemblies and controls, wire a circuit board, connect 2 precut, cabled wiring harnesses, and make a few simple adjustments. All controls are front-panel mounted for "easy-to-reach" adjustments.

CUSTOM OR CABINET INSTALLATION. Choose the chassis & tubes, and the custom wall mask (GRA-22-2 opposite) for mounting in either a custom cabinet or wall . . . required dimensions: 19″ H x 29⅛″ W x 17″ D. Or choose the handsome Heath walnut cabinet (illust.) that blends with today's decor.

SAVE ON MAINTENANCE COSTS. The GR-22A's superb manual contains circuit diagrams and a "servicing hints" section. Add to this the familiarity you gain while building this set, and you're able to make repairs or adjustments should it ever be necessary. Ideal for Christmas giving.

Kit GR-22A, chassis & tubes, 77 lbs. . . . no money dn., $16 mo. . . **$169.00**



Custom TV Wall Mount

Unfinished, ready for the finish of your choice. Includes ¾″ chassis mounting board. Cut & drilled to accept GR-22A chassis & tube. Size: 20⅜″ H x 30⅝″ W x 1-11/16″ D. Required mounting space dimensions: 19″ H x 17¾″ D x 28⅛″ W.

GRA-22-5, TV wall mount, 13 lbs. **$23.50**
GR-62B, TV set with wall mount, 90 lbs. . . . Save $7.50 . . . no money dn., $18 mo. **$185.00**



Deluxe TV Cabinet

Completely assembled and handsomely styled in rich modern walnut to match Heathkit Hi-Fi cabinents, pg. 42. Includes mask, chassis mounting board, and 6″ x 9″ hi-fi speaker . . . ready for chassis installation. Measures 36″ W x 32⅜″ H x 20½″ D.

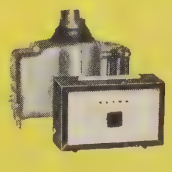
GRA-22-1, Walnut TV cabinet, 65 lbs. . . . no money dn., $9 mo. **$84.95**
GR-52A, TV set & walnut cabinet, 142 lbs. . . . Save $8.95, no money dn., $23 mo. . . . **$245.00**

GR-22A SPECIFICATIONS—Picture size: 23″ overall diagonal, approximately 282 sq. in. **Deflection:** Magnetic, 90°. **Focus:** Electrostatic. **Antenna input Impedance:** 300 ohm balanced. **Tuning range:** VHF TV Channels 2-13 & UHF Channels 14-83. **Picture IF carrier frequency:** 45.75 mc. **Sound IF carrier frequency:** 41.25 mc. **Sound IF:** 4.5 mc. **Video response:** to 3.2 mc. **Sound cathode follower:** Output impedance, 3 k ohm. Frequency response, ±1 db 50-15,000 cps; Harmonic distortion, less than 1%. Output Voltage 2V. **Audio output:** Output impedance, 8 ohms, Output Power, 2 watts. Frequency response ±2 db 50-15,000 cps. Harmonic distortion, less than 3%. **Power requirements:** 105 V to 125 V. 60 cycles AC, 210 watts. **Size required for mounting:** 19″ H x 29⅛″ W x 17″ D.



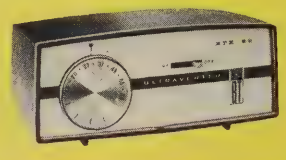
JFD Log-Periodic LPV-11 VHF TV Antenna!

Receives color, B & W TV (channels 2 thru 13), FM Stereo up to 125 miles away! Patented geometric concept for higher forward gain, sharper directivity, lower VSWR–down to 1.2 to 1, a front-to-back ratio of 35 db, Gold Bond Anodized finish. 11 V-elements!
GDP-124, 15 lbs. . . . . Mftrs. list $39.95 . . . . . Only **$23.45**



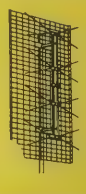
New! Alliance Tenna-Rotor . . . Save $16.50

New patented 5-wire bridge type circuit . . . unaffected by motor current, cable length or line voltage variations. Expanded meter scale. Rotates 360° either direction – instantly reversible. Magnetic brake. Lubricated for life. Moisture sealed. 115v AC, 60 cycle.
GDP-214, 11 lbs. **$23.45**



Blonder-Tongue BTX-99A All-Transistor UHF Converter

Adds all UHF channels 14 to 83 to any TV. Ideal for prime signal areas. Performs well with indoor antenna in many areas. All-transistor circuit provides maximum signal power, and drift-free no-distortion performance. UL approved. Not a kit.
Model GDP-595, 3 lbs. **$19.45**



Taco 4-Bay Model 3044 TV Bow-Tie UHF Antenna

Popular open vee type with pivot mount for rigid locking to existing mast; heavy mesh screen reflector of galvanized 12 gauge steel with 1″ x 1½″ squares for max. stability and long life.
GDP-233, 5 lbs. . . . Mftrs. list $8.75 Net **$5.14**



The Gift Everyone Wants— The New Heathkit 10 Band All-Transistor Portable —America's Best Value In Deluxe Shortwave Listening

• 10 bands tune Longwave, Standard Broadcast, FM and 2 mc.-22.5 mc. Shortwave Bands • 16 transistors, 6 diodes and 44 factory assembled and pretuned circuits • Two separate AM & FM tuners and IF strips • Two built-in antennas • Battery saver switch cuts current drain up to 35% • Rotating tuning dial • Dial light • Four simple controls for tuning, volume, tone, AFC and band switching • 4" x 6" PM speaker • Earphone & built-in jack • Optional converter/charger available • Time zone map & "listener's guide"

TRAVEL THE AIRWAYS OF THE WORLD. Unsurpassed global listening is always at your fingertips with this "go anywhere" new 10-band portable, 7 bands tune 2 mc.-22.5 mc. shortwave, marine and amateur stations. Longwave 150-400 kc receives aircraft and marine broadcasts. You enjoy the better music of the 88-108 mc FM band and the news, weather, and sports on the 550-1600 kc AM band. All with a tuning sharpness that permits receiving stations you've never heard before.

16 TRANSISTORS, 6 DIODES, 44 PREBUILT & ALIGNED RF CIRCUITS! Your assurance of cool, instant operation, superior performance and quick, easy assembly. Two separate AM and FM tuners are factory assembled, ready to drop into place (FM tuner and IF strip are the same components used in deluxe Heathkit FM stereo gear to assure the finest FM ever heard in a portable).

TWO BUILT-IN ANTENNAS—a large ferrite rod in the carrying handle for AM and longwave, and a 5′ telescoping whip for FM and shortwave.

CONVENIENT, VERSATILE CONTROLS. Like the battery-saver switch that cuts battery drain up to 35% for normal indoor listening, or provides full power for strong, outdoor reception. The rotating turret dial is directly driven by a 10-position selector . . . permits easy viewing of any band (a log scale aids in relocating unknown stations). There's a Dial Light switch for nighttime use; Automatic Frequency Control with on-off switch for easily tuned, drift-free FM; an 8½ revolution Tuning knob easily separates stations; a combination on-off-volume control and a continuous Tone control for listening as you like it.

INEXPENSIVE, FLASHLIGHT BATTERY POWER. 6 "D" batteries power the radio, and 1 "C" battery operates the dial light (batteries not included). Also operates on 117 v. AC as it "float" charges its batteries with optional converter/charger.

DELUXE STYLING MATCHES DELUXE PERFORMANCE. Jet black extruded aluminum front and back panels contrast beautifully with the chrome-plated, die-cast end pieces. Both front and back panels are hinged . . . open and close easily thanks to special magnetic edges . . . no cumbersome latches or snaps. Inside the front panel you'll find a hard-bound "listener's guide" with frequencies of worldwide shortwave and U.S. FM stations . . . travels snugly in its own special front panel slot. In addition, there's a special map for easy conversion of world time zones.

BUILD IT IN 10 HOURS OR LESS! With both tuners and all R.F. circuits preassembled and aligned, you merely mount this entire section on the chassis and wire 3 small circuit boards . . . no special tools or instruments needed.

Kit GR-43, 19 lbs. . . no money dn., $15 mo. **$159.95**
Model GRA-43-1, Converter/Charger for 117 v. AC, 1 lb. **$6.95**



AVAILABLE LATE NOVEMBER

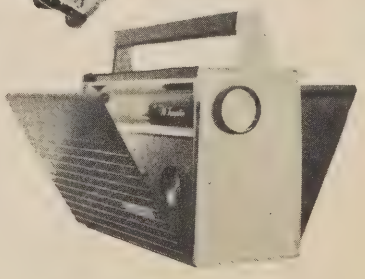
GR-43 SPECIFICATIONS—AM SECTION: Tuning range: Long wave—150-400kc; Broadcast—550-1600 kc; 2-4 MC—2-4 mc; 4-9 MC—4-9 mc; 31 M—9.2-10.2 mc; 25 M—11.2-12.4 mc; 19 M—14.5-16.1 mc; 16 M—16.8-18.8 mc; 13 M—20.2-22 A mc. **Sensitivity:** at External Antenna Input for a 10 db signal-plus-noise to noise ratio. Long Wave—12uv; Broadcast—10 uv; 2-4 MC—5 uv; 4-9 MC—3 uv; 31 M—3 uv; 25 M—2 uv; 19 M—2 uv; 16 M—2 uv; 13 M—2 uv. **Intermediate frequency (IF):** 455 kc. **FM SECTION:** Tuning range: 88-108 mc. **Sensitivity:** 1½ uv for 20 db of quieting; 2 uv for 30 db of quieting; 3 uv for 40 db of quieting. **Intermediate frequency (IF):** 10.7 mc. **GENERAL: Audio output: Normal:** 500 mw; Battery Saver: 160 mv. **Speaker:** 4″ x 6″ oval; permanent magnet; 3.2 ohm voice coil impedance. **Transistor complement:** (2) 155T1; (1) 154T1; (2) 2N1524; (4) 2N408; (1) 2N2495; (1) AF121; (1) 2N990; (4) 2N2654. **Diode complement:** (2) 1N191; (2) 1N541; (1) 1N3182; (1) 1N2326. **Batteries:** 6—size D cells; 1—size C cell. **Dimensions:** 13½″ W x 5⅛″ D x 10⅜″ H, including handle.



Optional Charger/Converter . . . to operate on 117 v. AC. Plugs into built-in jack to "float-charge" batteries while you enjoy good listening without battery drain. Priced at only $6.95.



Separate AM & FM Tuners —44 R.F. Circuits . . . all factory assembled and aligned to assure finest performance and fast, easy assembly. Just mount entire section in place, and wire 3 small circuit boards.



Convenient! Both front & back panels are hinged . . . close and open easily thanks to special magnetic edges. In addition, the front cover can be completely removed to take less space when in use at home.

1965 World Radio TV Handbook

World recognized authority for information on international radio, TV and telecommunications. Contains a list of all AM, FM, TV and Shortwave broadcasting stations . . . includes call signs, frequencies, transmitter power, address for QSL cards, program details, broadcast times, and hundreds of other items important to the shortwave listener. 300 pages.
GDP-315, 1 lb. **$4.95**

Hear The World On A Heathkit



Ideal Gift For The SWL Enthusiast . . . This Deluxe Receiver That Compares To Sets Costing $150 And More . . . Yet Costs 40% Less!

• 5 bands . . . 3 shortwave bands cover 2 mc to 30 mc, plus 550 kc to 1550 kc AM broadcast band, & 180 kc to 420 kc aeronautical & radio navigation band • Tuned RF stage for greater sensitivity • Half lattice crystal filter for sharp selectivity • Separate product detector for efficient SSB & CW reception • Switchable upper or lower sideband mode position • Built-in relative signal strength indicator • Electrical band-spread tuning • 6 tube-6 diode superhet circuit plus 2 silicon diode rectifiers • Built-in code practice monitor plus code key jack • Automatic noise limiter, automatic volume control & antenna trimmer control • "Velvet-touch" 20 revolution main tuning • Built-in 4" x 6" PM speaker • Built-in AM antenna plus external antenna terminals • Standard jack accepts headphones or external speaker • Safe transformer-operated power supply • Sleek low-boy styling–Charcoal gray metal cabinet • Antenna included

MAXIMUM PERFORMANCE FEATURES FOR THE AVID SHORTWAVE LISTENER! Like the half-lattice crystal filter for extra sharp selectivity . . . you won't find this feature on any unit selling for under $150. And the tuned RF stage that provides added amplification and image rejection. Or the separate product detector for efficient SSB & CW listening, plus a diode detector for AM. You'll also like the convenience of the switchable BFO control. Just switch to upper sideband (USB) or lower sideband (LSB) positions, and adjust the bandspread tuning control . . . eliminates "trial & error" SSB tuning. And for a new adventure in listening, try the aeronautical and marine broadcasts on the extra 180 kc-420 kc band.

ARE YOU AN ASPIRING AMATEUR RADIO OPERATOR? Then develop your keying proficiency with the code practice monitor. Simply connect your key to the terminals on the GR-54's back panel, tune in a weak AM station, turn on the BFO, and hear your key clicks through the built-in 4" x 6" speaker.

COMPLETE CONTROLS FOR FULL COMMAND OF ALL FUNCTIONS! There are separate level controls for audio volume & R.F. amplifier gain, an antenna trimmer for peak reception, band selector switch, bandspread tuning, mode selector, main tuning, automatic noise limiter, and an automatic volume control to eliminate blasting or fading while tuning.

HOW CAN WE OFFER THIS SUPERB UNIT AT AN UNMATCHED LOW PRICE? Typical Heath Enginuity, of course. But we've gone a step further to add extra savings. With the GR-54, you build & align the front-end tuner . . . with or *without* instruments . . . and get factory-built results! Thanks to a unique printed circuit bandswitch assembly, you simply align the coils with the alignment tool provided, and use the signal strength meter for adjustment readings. The entire GR-54 construction time is around 12 to 15 hours.

As for looks, judge for yourself. Wouldn't it make an attractive addition to your den or living room?

Kit GR-54, 25 lbs...no money dn., $9 mo. **$84.95** Export model available for 115/230 VAC, 50-60 cps; write for prices.

GR-54 SPECIFICATIONS—Frequency Coverage: Band A 180 kc to 420 kc; Band B 550 kc to 1550 kc; Band C 2 mc to 5 mc; Band D 5 mc to 12.5 mc; Band E 12.5 mc to 30 mc. **Sensitivity:** AM: Band A 1.6 uv; Band B 8 uv; Band C 1 uv; Band D 1.2 uv; Band E 6 uv. SSB/CW: Band A 0.7 uv; Band C 0.4 uv; Band D 0.5 uv; Band E 4 uv. Signal Level for 10 db, signal plus noise to noise ratio. **Selectivity:** Half lattice crystal filter; 3 kc minimum at —6 db; 7.5 kc maximum at —20 db. **Intermediate frequency:** 1682 kc. **Antenna Input impedance:** 50 ohms nominal—phono connector. **Power requirements:** 120 volts 50/60 cps AC, 45 watts. **Tube & diode complement:** 6BH6 RF amplifier, 6EA8 oscillator and mixer; (2) 6BA6 IF amplifier; 12AT7 BFO and product detector; 6HF8 audio preamplifier and power amplifier; 2 semi-conductor diodes—AVC rectifier; 2 semi-conductor diodes—AM detector; 2 semi-conductor diodes—ANL; 2 semi-conductor diodes—power supply rectifiers. **Controls:** Bandspread, AF Gain/off-on switch; RF Gain; Ant. trim; Mode switch; Band switch; Main tuning; AVC switch; ANL switch; OPR switch; Meter adjust. **Audio output impedance:** 8 ohms nominal. **Meter:** Indicates relative signal strength. **Speaker:** Built-in 4'' x 6'' permanent magnet. **Standard jack:** Accepts 8 ohm ext. speaker, or headphones (50 ohm to 10 K ohm). **Dimensions:** 14⅝'' W x 6-5/16'' H x 10-15/16'' D.

Shortwave Antenna Kit . . . FREE With GR-54!

Consists of 75' long-wire antenna, 30' lead-in wire, porcelain insulators and grounding hardware, instructions. Free with GR-54 only. Also ideal for use with Heathkit GR-64 and GR-81 shortwave receivers.

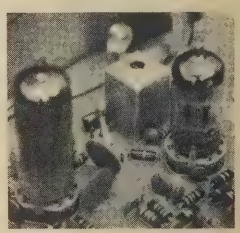
Kit GRA-72, 2 lbs.....**$1.45**



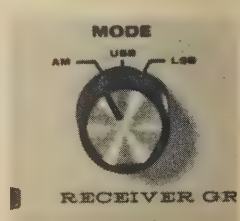
Tuned RF Stage Included in unique printed circuit bandswitch assembly. Provides added amplification & image rejection for greater sensitivity.



Half Lattice Crystal Filter . . . gives you extra sharp selectivity. You won't find this feature on any unit selling for under $150.



Separate Product Detector . . . for efficient SSB & CW reception. For AM, there's a diode detector.



Switchable BFO Control . . . Simply switch to the USB or LSB position, and adjust the bandspread tuning control . . . eliminates "trial & error" SSB tuning.

Shortwave Radio!

HEATHKIT



Seeking New Adventure? Then Explore The Worldwide Listening Of Shortwave With This Low Cost Receiver!

• 4 bands–3 shortwave bands cover 1 mc to 30 mc, plus 550 kc to 1620 kc AM broadcast band • Built-in 5" permanent magnet speaker for a big, bold sound • Illuminated 7" slide-rule dial with extra logging scale • Easy to read lighted bandspread tuning dial for precise station selection • Relative signal strength indicator aids pin point station tuning • 4-tube superhet circuit plus two silicon diode rectifiers • Variable BFO control for code & SSB transmissions • Built-in external antenna connections • Built-in AM rod antenna • Fast, simple circuit board construction assures stability • Handsome "low-boy" styling–charcoal gray cabinet, black front panel, and green & white band markings • Headphone jack for private listening

AROUND THE WORLD AT THE TWIRL OF A DIAL! Imagine hearing a radio operator at a weather station in the Antarctic report: *"It's 40° below zero this morning"* . . . thrill to the somber tones of Big Ben from London . . . or wonder at the machine gun pace of a CW operator sending an urgent code message. This is just a fraction of the exciting listening that's yours with the GR-64. Hear live broadcasts from Japan, Australia, Peru, Holland, Brazil, the Congo, dozens of foreign countries. Pick up the Voice Of America, Radio Moscow . . . tune in ham operators, the buzzing drone of Coast Guard LORAN stations, ship-to-shore broadcasts, & weather reports. Even get the exact time from government station WWV in Washington, D.C. And, of course, enjoy your favorite programs on popular AM radio.

You hear it all . . . and much more . . . all on this single general coverage receiver!

ADVANCED FEATURES INSURE SHARPER RECEPTION, GREATER OPERATING CONVENIENCE! A high voltage, transformer-operated power supply insures peak receiver efficiency. A BFO control "unscrambles" code and SSB transmissions. A "velvet-touch" 16 revolution tuning knob provides smooth, accurate station selection. And electrical bandspread tuning provides maximum station separation. There's even a headphone jack for private listening.

The back panel has terminals for an external antenna, a Q-multiplier input, and a noise limiter on/off switch.

MODERN "LOW-BOY" STYLING! Its charcoal gray metal cabinet with black front panel and green & white band markings makes a handsome addition to any room. And with easy circuit board construction, assembly takes only about 8 fun-filled hours.

Kit GR-64, 15 lbs.
No money down, $5 mo. **$37.95**

GR-64 SPECIFICATIONS—Frequency range: 550 kc to 30 mc in four bands. **Controls:** General coverage tuning, Bandspread tuning, Bandswitch, Noise Limiter—ON/OFF, Phone-Standby-CW switch, BFO control, Audio Gain, AC-ON/OFF, Headphone jack, Q-multiplier input. **Power requirements:** 105-125 V 50/60 cycles AC, 30 watts. **Dimensions:** 13½" W x 6" H x 9" D.



Enjoy Shortwave Listening Anywhere With A "Mohican" Portable SWL Receiver!

GC-1A
$89.50

• Powerful 10 transistor, 6-diode circuit • Tunes 550 kc to 32 mc in five bands • Fixed-aligned ceramic IF "transfilters" for best selectivity • Completely self-contained for portability, yet can operate on 117 V. AC with XP-2 accessory below

HANDSOME, COMPACT, READY TO GO ANYWHERE! In addition to the features above, the GC-1A has Zener diode voltage regulation . . . smooth, easy flywheel tuning . . . built-in 4" x 6" speaker . . . panel tuning meter for precision tuning . . . 50" telescopic whip antenna . . . headphone jack for private listening . . . large, slide-rule dial for accurate station selection. Less batteries. Requires RF generator for final alignment.

Kit GC-1A, 18 lbs. . . no money dn., $9 mo. **$89.50**
Kit XP-2, 117 v. AC plug-in power supply, 2 lbs. **$9.95**

GC-1A SPECIFICATIONS—IF Frequency: 455 kc. **Frequency coverage:** 550 kc to 32 mc in 5 bands with calibrated bandspread scales (oscillator tuning) for 80, 40, 20, 15 and 10 meter amateur bands and 11 meter citizens band. **Selectivity:** 3 kc wide at 6 db down. **Sensitivity:** 10 uv broadcast band, 2 uv shortwave bands for 10 db signal-to-noise ratio. **Output:** 400 milliwatts max. **Battery life:** Up to 400 hours normal intermittent service using 8 standard size "C" cells. **Dimensions:** 6⅞" H x 12" W x 10" D.

GR-81
$23.50



Shortwave Listener's Radio!

COVERS 140 KC TO 18 MC to bring you international shortwave stations; 160, 80, 40, & 20 meter amateur bands; low frequency marine & aircraft stations; government stations; and popular AM listening. Simple 3-tube regenerative circuit assembles in just 6 hours! Features provisions for long & short antennas, "shock-free" transformer operated power supply, built-in speaker, headphone jack, front-panel controls, & green & beige metal cabinet.

Kit GR-81, 12 lbs. **$23.50**

GR-81 SPECIFICATIONS—FREQUENCY COVERAGE: 140 kc to 18 mc on four bands. **Tube complement:** 12AT7 Detector/1st Audio, 50C5 Audio Output, 35W4 Rectifier. **Power requirements:** 105-125 V 50/60 cycle AC only, 30 watts. Fused. **Controls:** Main tuning (calibrated), Bandspread, Bandswitch, Regeneration, on/off volume, phone jack. **Dimensions:** 10" W x 7" H x 7" D.

Play Your Favorite Carols This Christmas



All-Transistor "Coronado" BL-3 with Full Professional Organ Features Including Chimes And Leslie Speaker . . . New Lower Price For Greater Savings!

• All genuine Thomas factory-fabricated components • 17 beautiful, rich organ voices • Two full-size 44-note keyboards • A built-in 2-speed Leslie plus 2-unit Main speaker system • 28 notes of melodious chimes . . . hundreds of chime variations • 13-note heel & toe pedalboard, range C thru C • Reverb for concert hall realism • Sustain on keyboards & pedals for a variety of special effects • Vibrato for warmth & beauty • New Stereo Chorus Control to create exciting "stereo" effects • Color-tone Attack & Repeat Percussion to produce additional voice effects • Treble Accent for added brilliance • Manual Balance to adjust relative volume of the two keyboards • Pedal Volume to adjust bass pedal loudness • Headset outlet to play without disturbing others • A full 5-year warranty on transistor tone generator boards . . . the heart of the organ • Luxurious full-bodied walnut finished cabinet . . . handcrafted, hand-rubbed, completely assembled • Diode switching on upper keyboard . . . faithfully reproduces attack and decay of each musical tone with no annoying key "clicks"

Acclaimed By Experts!

High Fidelity Magazine: *"The touch of the keyboard and other controls—gentle, yet positive—suggests, as one player put it, 'the fine breeding of this instrument'. . . Thanks to the excellent instruction manual and careful packaging of parts, the job should be within the range of most beginners at kits."*

GD-983

$799.00

(including bench)

Only $125 dn., as low as $27 mo.

JUST TOUCH A TAB! And create any one of 17 beautiful organ voices . . . Saxophone 8′, French Horn 8′, Violin 8′, English Horn 8′, Oboe 8′, Flute 8′, Cello 8′, Bass Clarinet 16′, Trumpet 16′, Bourdon 16′, Flute D'Amour 4′, Quint 5⅓′, and Diapason 16′ & 8′. And you'll easily learn combinations to produce additional voices such as the hawaiian guitar, vibraharp, harpsichord, zither, calliope, bagpipes, etc. . . . plus different musical moods, classical, popular, religious. The 28 notes of chimes—worth $500 to $2000 as an extra on other organs—offer hundreds of variations . . . Cathedral, Flemish, Carrillon, Tubular, Jazz, etc. It's like having an entire orchestra at your fingertips.

2 SEPARATE SPEAKER SYSTEMS . . . a built-in 2-speed rotating Leslie plus two 12″ main speakers. With the Leslie system you can reproduce the beauty of a full "theatre" organ, or the rich randomness of sound suitable for religious selections. And by playing both speaker systems at once, you create an exciting "stereo" effect.

COLOR-TONE ATTACK, REPEAT & SUSTAIN PERCUSSION . . . the first organ to give you all three. Produce the effect of a xylophone, mandolin, marimba, banjo, string, etc. You can vary the rate of repeat percussion and select short or medium sustain.

TWO FULL 44-NOTE KEYBOARDS . . . tilted upper manual overhangs to permit easy bridging of the two manuals.

MANUAL BALANCE . . . to adjust relative volume and accentuate either manual for solo work.

13-NOTE HEEL & TOE PEDALBOARD . . . range C thru C.

PEDAL SUSTAIN . . . for special rhythm effects such as a string bass.

PEDAL VOLUME CONTROL . . . continuously variable. Allows regulating bass pedal volume to suit the music's mood.

VIBRATO SWITCH . . . adds warmth and beauty.

EXPRESSION PEDAL . . . adjusts volume from a whisper to full majesty.

REVERB . . . adds concert hall realism.

TREBLE ACCENT TAB . . . adds new clarity & brightness to solo work.

HEADPHONE OUTLET . . . play anytime without disturbing others.

ALL-TRANSISTOR 75-WATT EIA PEAK POWER AMPLIFIER . . . assures wide dynamic range, clear clean treble and full organ bass.

PRE-TUNED TONE GENERATOR . . . enables you to tune the organ by a simple counting method. No "musical" ear needed.

DIODE SWITCHING ON UPPER MANUAL . . . faithfully reproduces attack and decay of each musical tone with no annoying key "clicks."

LUXURIOUS HARDWOOD CABINET & BENCH. . . handcrafted and handrubbed with full-bodied walnut finish. Cabinet measures 36″ H x 44″ W x 24″ D.

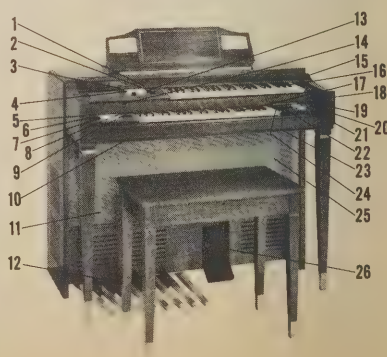
NO EXTRAS NEEDED, NOTHING MORE TO BUY! There are *no* speakers, amplifiers or other "hidden necessities" to add as with other organ kits. It's all there at *one* price . . . even the bench!

EASY TO BUILD, EASY TO PLAY! You don't have to be an electronic wizard to build it, nor a professional organist to play it. Famous Heathkit instructions reduce assembly to simple steps that require no special talents, tools or knowledge. And the Thomas "Musical Fun Book" is included to start you playing fast. Wouldn't the GD-983 be great to have this Christmas season?

Kit GD-983, Organ & matching walnut bench, 245 lbs. . $125 dn., as low as $27 mo **$799.00**

Like To Hear It Perform?

Send 50c to cover postage & handling, and ask for the 7″ 33⅓ rpm demonstration record no. GDA-983-2. You'll convince yourself.



1. Sustain Tab **2.** Reverb **3.** Swell Keyboard Voices **4.** On-Off And Pedal Volume **5.** Pedal Tab **6.** Pedal Sustain Tab **7.** Great Keyboard Voices **8.** Vibrato Tab **9.** Treble Accent Tab **10.** Headphone Jack **11.** Leslie Speaker **12.** Pedalboard **13.** Manual Balance **14.** Pilot Light **15.** Chimes **16.** Swell Keyboard **17.** Great Keyboard **18.** Leslie Rotor Switch **19.** Leslie-Main Speaker Tab **20.** Stereo Chorus **21.** Color-Tone Percussion Tabs **22.** Percussion Repeat Rate **23.** Percussion Delay Tabs **24.** Repeat Percussion Tab **25.** Main Speakers **26.** Expression Pedal

on a Heathkit®/Thomas Organ

HEATHKIT





GD-232B

$332.00

(less bench)

World's Lowest Cost All-Transistor 2-Keyboard Organ . . . A Gift The Whole Family Can Enjoy!

• All genuine Thomas factory-fabricated components • 10 true organ voices • Variable repeat percussion . . . produces banjo, mandolin, balalaika effects • 13-note heel and toe bass pedals • 2 overhanging 37-note keyboards, range C thru C • 50 watt EIA peak music power amplifier • 12″ speaker • Transistorized plug-in tone generators, the heart of the organ . . . warranted for 5 years • Handcrafted, hand-rubbed walnut cabinet . . . completely assembled

GREAT FOR LIVENING UP PARTIES . . . song fests . . . background music . . . dancing. That's the GD-232B organ. Helps you to relax and unwind after a hard day. And teens will love the rhythm and bounce of its many musical effects. Ten true organ voices in all . . . trombone, reed, flute, oboe, cornet, violin, saxophone, horn, viola, and diapason. All at the simple touch of a tab. Also includes repeat percussion to create additional banjo and mandolin effects; 13-note heel and toe bass pedals; variable expression pedal to change the volume; two levels of vibrato intensity; variable bass pedal volume; plus many many more professional features outlined in the diagram opposite. **IT'S EASY TO LEARN HOW TO PLAY!** In fact, the organ is one of the easiest instruments to play . . . doesn't require a world of practice. Excellent for giving both youngsters and grownups a knowledge and appreciation of music. **BUILD IT IN 50 HOURS OR LESS!** Takes no special skills or knowledge. Includes simple step-by-step instructions . . . genuine Thomas fabricated parts . . . diagrammed, easy-to-wire circuit boards . . . factory assembled, hand-rubbed walnut cabinet (measures a compact 41¼″ H x 39¾″ W x 21½″ D) that's ready for the sub-assemblies as you complete them. You even tune the organ with the pre-tuned tone generator . . . no "special" ear needed. Probably more inexperienced kit builders have assembled this low cost organ than any other kit we produce. Owner George J. Agamemnon, Burlington, N. C. summed up the GD-232B's performance when he wrote: *"I am most pleased with the final product. It plays beautifully and my family is enjoying it immeasurably. It is a credit to your engineering staff. In addition, the assembly instructions are very clear and easy to follow, which makes the assembly task enjoyable and simple."*

Kit GD-232B, Organ, 151 lbs. . . $34 dn., $28 mo. **$332.00**
GDA-232-1, matching walnut bench, 18 lbs. No money dn., $5 mo. **$24.95**
ATTENTION HEATHKIT GD232 ORGAN OWNERS! Add Variable Repeat Percussion to your organ with this easy to install kit.
GDA-232-4, 1 lb. . . . . Only **$9.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Hear It Perform!

Send for your 7″, 33⅓ rpm record that demonstrates the playing versatility of the "Artiste." Use order blank in center of flyer and enclose 50c for postage & handling.

GDA-232-5, demonstration record. **50c**

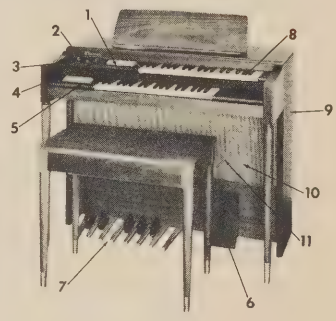
Self-Teacher Recorded Lessons For GD-983 & GD-232B Organs!

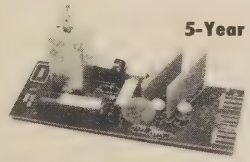
Can't play a note? Learn quickly & easily at your leisure with this complete 48-lesson course on four 12″ LP records. Includes music book with many old-time favorites. Ideal for use with either GD-983 or GD-232B Heathkit/Thomas Organs. Save $30.05.

GDA-232-2, lessons, 5 lbs. . . Mftrs. list $50. . . . . **$19.95**

PROFESSIONAL FEATURES FOR VERSATILE PERFORMANCE!

1. 10 True organ voices; trombone, reed, flute, oboe, cornet, violin, saxophone, horn, viola, diapason **2.** Variable Repeat Percussion; produces banjo, marimba, mandolin, and balalaika effects **3.** Variable Bass Pedal Volume Control **4.** Manual Balance Control, adjusts volume of keyboards in any degree for solo work **5.** Variable Vibrato **6.** Standard Expression Pedal; adjusts volume from soft to full **7.** 13-note Heel & Toe Bass Pedals **8.** Overhanging Keyboards; each with 37 notes, range C thru C **9.** Beautiful Walnut Cabinet; modern styling, hand-rubbed, hand-crafted **10.** All-Transistor Amplifier **11.** 12″ Speaker • Transistorized for longer life, better tone, trouble-free operation.





5-Year Warranty On GD-983 & GD-232B Tone Generators

The transistorized plug-in tone generator boards, the heart of the organ, are warranted for five years. You buy with confidence when you buy a Heathkit version of the Thomas Organ. Replacement upon prepaid return of undamaged board to the Heath Company.

Thomas Organ Music Books

HELLO DOLLY . . . all words and music from this famous musical.
GDP-165, 1 lb. **$2.00**
BERLIN'S BEST . . . "Always," "Say It Isn't So," 23 Berlin favorites.
GDP-135, 2 lb. **$2.50**
AROUND THE WORLD IN WALTZTIME . . . 14 waltz favorites, "Fascination," "My Wild Irish Rose," etc. . . .
GDP-155, 1 lb. $2.00
LIGHT CLASSICS . . . "Serenade," "The Swan," 12 popular classics.
GDP-145, 1 lb. $2.00

Now Choose From Two Heathkit® All-Transistor



AR-13A

$184.00

The World's First Transistor Stereo Receiver Kit . . .

The Renowned 66-Watt Heathkit AR-13A . . . Now A Better Buy Than Ever At The New Lower Price Of Just $184.00

• 46 transistor, 17 diode circuitry for cool, instant, economical operation and the crisp, natural beauty of "transistor sound" • Compact, yet houses two 33-watt power amplifiers . . . two pre-amplifiers . . . and wide-band AM/FM/FM Stereo tuner • Built-in stereo demodulator . . . automatically switches to stereo • Built-in stereo indicator light • Filtered outputs for direct, "beat-free" stereo recording • Provides 66 watts IHF music power, 40 watts rms from 15 to 30,000 cps • Luxurious walnut cabinet styled in Heathkit low-silhouette motif • Preassembled, prealigned "front-end" and AM-FM I.F. strip aid construction

YOUR BEST STEREO RECEIVER VALUE—BAR NONE! Why? For one thing, the Heathkit AR-13A costs much less than other fine stereo receivers on the market today. Even if you can afford to buy the costliest model, you can't buy better performance. Start with the AR-13A's solid-state circuitry. 46 transistors and 17 diodes in all . . . your assurance of cool, instant, hum-free operation, long trouble-free life, and the quick, pure, unmodified response of "transistor sound" at each and every frequency over its entire 15 to 30,000 cps range . . .characteristics just not obtainable in tube types.

VERSATILE PERFORMANCE! There's wide-band AM, FM, and FM stereo tuning for reception to delight the most critical ear. It has two preamps. And coupled with its two power amplifiers, the AR-13A provides 66 watts of IHF music power, 40 watts of continuous sine-wave power. All this is housed inside one luxurious, compact walnut cabinet . . . just connect two speakers for a complete stereo system.

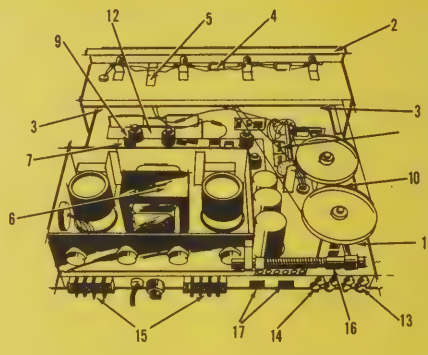
THERE ARE PLENTY OF OPERATING CONVENIENCES TOO! A solid-state circuit automatically channels the signal through the built-in stereo adapter when stereo is received. Then the automatic stereo indicator lights. The tape recorder outputs are filtered for direct "beat-free" recording. There are dual-tandem controls for simultaneous adjustment of volume, bass, and treble of both channels; a separate control for balancing both channels; and 3 stereo inputs—mag. phono and two auxiliaries. The AM tuner features a high gain RF stage & a high Q rod antenna. The FM tuner has a built-in line cord antenna plus external antenna connectors.

BUT THAT'S NOT ALL! There's a local-distance switch for optimum reception in all signal areas; an FM squelch control; AFC for drift-free reception; plus flywheel tuning, tuning meter, and lighted AM & FM slide-rule dials for fast, easy station selection. The secondary controls are concealed under the hinged lower section of the gold anodized aluminum front panel to prevent accidental system setting changes. Both FM front-end and the AM-FM I.F. strip are pre-assembled and prealigned to simplify construction.

COMPARE THE AR-13A's IMPRESSIVE SPECIFICATIONS! Then order yours now, in time for superb Christmas listening!

Kit AR-13A, 35 lbs. . . no money dn., $18 mo. **$184.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Important: The AR-13A is exempt from any Special System Discount.



The Latest "Solid-State" Circuitry & Features

1. Pre-assembled pre-aligned AM/FM IF strip **2.** Gold anodized extruded aluminum front panel **3.** Flywheel tuning **4.** Tuning meter **5.** Stereo indicator light **6.** Transformer operated power supply **7.** Built-in stereo demodulator **8.** Built-in line antenna FM (not shown) **9.** 19 kc and 38 kc output filter **10.** Pre-assembled, prealigned FM front end **11.** AM RF amplifier stage **12.** Circuit modules **13.** Three stereo inputs **14.** Low impedance tape recorder outputs **15.** Transformerless 4, 8, and 16 ohm outputs **16.** AM rod antenna **17.** Switched and unswitched line outputs.

AR-13A SPECIFICATIONS—Recommended system mates: Speaker systems: AS-10 or AS-51, ppg. 22-23; separate speaker: AS-183, pg. 21; all changers, ppg. 19-20. **AMPLIFIER: Power output per channel (Heath Rating):** 20 watts/8 ohm load, 13.5 watts/16 ohm load, 9 watts/4 ohm load. (IHF Music Power Output): 33 watts/8 ohm load, 18 watt/16 ohm load, 12 watts/4 ohm load @ 0.7% THD, 1 kc. **Frequency response:** ±1 db from 15 cps to 30 kc @ rated output; ±3 db from 10 cps to 60 kc @ rated output. **Harmonic distortion (at rated output):** Less than 1% @ 20 cps; less than 0.3% @ 1 kc; less than 1% @ 20 kc. **Intermodulation distortion (at rated output):** Less than 1%, 60 & 6,000 cps signal mixed 4:1. **Hum & noise:** Mag. phono, 50 db below rated output; Aux. inputs, 65 db below rated output. **Channel separation:** 40 db @ 20 kc, 60 db @ 1 kc, 40 db @ 20 cps. **Input sensitivity: (for 20 watts output per channel, 8 ohm load):** Mag. phono, 6 MV; Aux. 1, .25 v; Aux. 2, .25 v. **Input impedance:** Mag. phono, 35 K ohm; Aux. 1, 100 K ohm; Aux. 2, 100 K ohm. **Outputs:** 4, 8, & 16 ohm and low impedance tape recorder outputs. **Controls:** 5-position Selector; 3-position Mode; Dual Tandem Volume; Bass & Treble Controls; Balance Control; Phase Switch; Input Level Controls (all inputs except Aux. 2); Push-Pull ON/OFF Switch. **FM: Tuning range:** 88 mc to 108 mc. **IF frequency:** 10.7 mc. **Frequency response:** ±3 db, 20 to 15,000 cps. **Capture ratio:** 3 db. **Antenna:** 300 ohm balanced (internal for local reception). **Quieting sensitivity:** 1½ uv for 20 db of quieting, 2 uv for 30 db of quieting. **Bandwidth:** 325 kc @ 6 db down with 1000 uv input. **Image rejection:** 35 db. **IF rejection:** 70 db. **AM suppression:** 35 db. **Harmonic distortion:** Less than 1%. **STEREO MULTIPLEX: Bandpass:** ±¼ db, 50 to 53,000 cps. **Channel separation:** (SCA Filter Off) 30 db, 50 to 2,000 cps. 25 db at 10 kc. **19 KC 38 KC Suppression:** 45 db down from rated output at 1 kc. **SCA Rejection:** 35 db down from rated output. **AM Tuning range:** 535 to 1620 kc. **IF frequency:** 455 kc. **Sensitivity:** 30 uv @ 600 kc; 9 uv @ 1000 kc. **Bandwidth:** 8 kc @ 6 db down. **Image rejection:** 40 db @ 600 kc. **IF rejection:** 55 db @ 1000 kc. **Harmonic distortion:** Less than 2% with 1000 uv input; 400 cps with 30% modulation. **Hum & noise:** 40 db. **Overall dimensions:** 17" L x 5½" H x 14¾" D. **Power requirements:** 105-125 volts, 50-60 cps AC, 30 watts idling, 110 watts max.

Stereo Receivers—66 Watts or 30 Watts



AR-14
$99.95
(less cabinet)

AVAILABLE EARLY DECEMBER

THROUGH HEATH NEW RESEARCH

Now A High Quality, Low Cost All-Transistor Stereo Receiver . . . The New Heathkit AR-14 . . . 30 Watts Of Stereo Music Power . . . FM/FM Stereo Tuner . . . Custom Installation Versatility . . . Assembles In 20 Hours Or Less . . . Costs Just $99.95

• 31 transistor, 11 diode circuit for cool, instant operation with the transparent, natural sound only transistors can deliver • ± 1 db, 15 to 60,000 cps, at 10 watts per channel continuous (20 watts total), 15 watts per channel IHF music power (30 watts total) • Wideband FM/FM stereo tuner plus two preamplifiers and two power amplifiers • Front panel stereo headphone jack • Compact—just 3⅞" H x 15¼" W x 12" D • Custom install it in wall, your own cabinet, or either Heath cabinet • Build it in 20 hours

AT LAST . . . A WORTHWHILE STEREO RECEIVER FOR UNDER $100. The new Heathkit AR-14 breaks the price barrier in quality stereo receivers. Here for the first time is a stereo receiver that performs like the high-priced spread, yet costs just $99.95! Compare it! *Professional Solid-State Circuitry.* 31 transistors, 11 diodes . . . no skimping, no short cuts . . . to produce truly amazing performance. Extremely wide frequency-power response . . . 15 to 60,000 cps at full power in both channels and at ±1 db! Amplifier input sensitivity sufficient for the low output of magnetic cartridges. FM tuner sensitivity that assures good stereo reception even from distant stations. Filtered tuner outputs for beat-free tape recordings. Output power sufficient to drive all but the most inefficient speaker systems. New transformerless complementary output amplifier circuit insures minimum phase shift, widest response, lowest distortion. Solid state power supply with Zener regulation of FM circuitry for utmost stability and performance.

COMPLETE OPERATING CONVENIENCE. All controls are front-panel mounted. They include: 6-position source switch, dual concentric volume control, tandem treble control with push-pull power switch, tandem bass control with push-pull speaker on-off switch (for use when listening to stereo headphones from the convenient front panel jack), FM stereo phase control for maximum separation during broadcasts, flywheel weighted main tuning control.

SMART STYLING, COMPACT SIZE. Some stereo receivers look rather *like* a bookshelf . . . not so with the new AR-14 . . . it will fit *into* a bookshelf . . . measures just 3⅞" H x 15¼" W x 12" D . . . a boon to the decor-conscious. Looks good, too, with its handsome anodized aluminum front panel fitting in with a wall or custom cabinet installation, or in either of the optional Heath walnut veneer or beige steel cabinets.

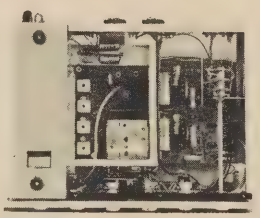
BUDGET-BOUND OR VALUE CONSCIOUS . . . you'll find the new Heathkit AR-14 Stereo Receiver a better performer than most, a better buy than any.

Kit AR-14, 15 lbs., less cab. for custom mtg. . . no money down, $10 mo. **$99.95**

Model AE-55, 4 lbs., walnut veneer cabinet. **$9.95**

Model AE-65, 5 lbs., beige steel cabinet. **$3.95**

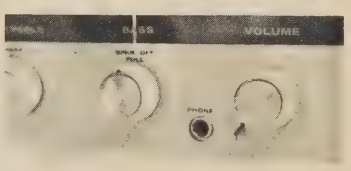
Export model available for 115/230 VAC, 50-60 cps; write for prices.



Compact Size . . . only 3⅞" H x 15¼" W x 12" D. Yet contains wideband FM/FM Stereo tuner, two preamplifiers and two power amplifiers. Install in a wall, custom or either Heath cabinet.



Solid-State Power Supply . . . zener-type for regulation within 10% (rarely found even in more expensive units). Insures full power at each frequency throughout its wide 15-60,000 cps range.



Front Panel Stereo Headphone Jack . . . for the convenience of private listening. Simply plug headphones in, and turn the speakers off with the push-pull on-off switch on the bass control.

AR-14 SPECIFICATIONS—Recommended system mates: All speakers & speaker systems, ppg. 21-22-23, except AS-2A & AS-2U; all changers & turntables, ppg. 19 & 20. **AMPLIFIER: Continuous power output:** 10 watts each channel—20 watts total. **Music power output (IHF):** 15 watts per channel. **Speaker output impedance:** 4 through 16 ohm. **Tape output impedance:** 3.5 K ohm. **Damping factor:** 50. **Hum and noise:** Phono: —60 db; Auxiliary: —63 db. **Frequency response:** 10 to 60,000 cps ±1 db; 6 to 100,000 cps ±3 db. **Power response:** 15 to 50,000 cps ±1 db; 7 to 90,000 cps ±3 db. **Input sensitivity:** Phono: 4 mv; Auxiliary: 300 mv. **Input impedance:** Phono: 47 K ohm; Auxiliary: 180 K ohm. **Channel separation:** 45 db or better. **Total harmonic distortion (at rated output):** .5% or less @ 1000 cps, 19% or less @ 20 & 20,000 cps. **Intermodulation distortion (at rated output):** Less than 1% (60 & 6,000 cps, 4:1). **Phono equalization:** RIAA. **Transistor complement:** (2) 2N3391* 1st preamp; (7) 2N2712* 2nd, 3rd preamp, 1st pre-driver, electronic filter; (2) 2N3416* 2nd pre-driver; (2) 2N3053* driver; (2) TA2577A output; (2) 2N2148* output. **Diode complement:** (2) 1N3754* Reference diode; (4) F1* Bridge rectifier. **Front panel:** 6-position Source Switch: Mono-Phono; Stereo Phono; Mono Auxiliary; Stereo Auxiliary; Mono FM; Stereo FM; Volume Control; Bass Control; Treble Control; Phone Jack. **Rear panel:** Fuse AC Power Socket: Switched & Unswitched. Speaker Terminal Block: One Left & One Right Speaker. Ground Terminals: 1; Triple Phone Socket. **Power requirement:** 105-125 volts 50/60 cps; 32 watts idling; 65 watts full output; (No load on AC power sockets). **Dimensions:** Overall 15¼" W x 3⅞" H x 12" D. **Mounting position:** Horizontal or Vertical; Cutout required 15" x 3½"; Depth required from front of mounting surface 11½". **FM: Tuning range:** 88-108 mc. **Antenna:** Balanced input for external 300 ohm antenna. **Intermediate frequency:** 10.7 mc. **Sensitivity (IHF):** 5 uv for less than 3% total noise, distortion, hum —30 db. **Hum & noise (IHF):** —50 db. **Audio frequency response (IHF):** 0 to —3 db from 20 to 15,000 cps. **Harmonic distortion (IHF):** 1% or less. **Image ratio (IHF):** —40 db. **Capture ratio (IHF):** 3 db. **AFC correction:** 150 KC per volt. **AM suppression (IHF):** —40 db. **IF rejection (IHF):** —80 db. **FM STEREO: Separation:** 30 db @ 1 KC. **Transistor complement:** (1) TI XM201 RF amp.; (1) TI XM203 osc.; (1) 2 SA240 mixer; (4) 2N2654 IF amp. & Limiter; (7) 2N2712 multiplex amp, 19 KC amp, emitter follower, 38 KC osc., switching detectors, stereo indicator amps.

*or equivalent.

Give the Finest in Sound . .



• 26-transistor, 10-diode circuitry for smooth, uncompromising power response . . . 13 to 25,000 cps ± 1 db at 35 watts rms per channel (50 watts IHF music power) • Concert hall realism, cool instant operation, complete freedom from microphonics • Encapsulated, epoxy-covered modules for fast, simple assembly • Versatile installation . . . choose unit without a cabinet, or with either a walnut wood or tan vinyl-clad steel cabinet . . . matches AJ-43D

AA-21D $137.00
(less cabinet)



• 25-transistor, 9-diode circuit for pure, natural "transistor sound", heat-free operation • AM/FM/FM stereo tuning • Automatic stereo switching • Automatic stereo indicator light • Filtered outputs for direct, beat-free recording • Separate AM & FM tuning meters • Stereo phase control for maximum separation, minimum distortion • Automatic Gain Control for even, steady volume • Versatile installation . . . choose unit without a cabinet, or with either walnut wood cabinet or tan vinyl-clad steel cabinet

AJ-43D $109.00
(less cabinet)

Deluxe All-Transistor AM/FM/FM Stereo Tuner . . . Now With Custom Or Optional Cabinet Versatility

BETTER VALUE, BETTER SOUND. Now at its new lower price with its new versatility of installation, the AJ-43D is an incomparable value. The advantages of transistor sound . . . clean, transparent sound quality . . . cool, instant operation . . . sensitive reception of AM, FM, and FM Stereo. The freedom of installation choice . . . in your own custom cabinet, entertainment wall, or with rich walnut finished cabinet or tan vinyl clad steel cabinet. The better-than-ever-buy . . . now $109.00.

DELUXE PERFORMANCE, DELUXE FEATURES . . . like automatic switching to stereo . . . automatic stereo indicator light . . . automatic frequency control for positive tuning . . . emitter-follower outputs for superior fidelity . . . lighted slide rule dial . . . heavy flywheel tuning . . . transformer operated power supply.

EASY TO BUILD. Factory built and aligned "front-end" and 4-stage FM I.F. circuit board gets the job off to a fast start, assures professional performance. You'll enjoy the circuit board construction.

Kit AJ-43D, 15 lbs., less cabinet for custom mounting . . .
no money down, $11 mo. **$109.00**
Model AE-11, 8 lbs. Luxurious walnut wood cabinet. **$12.95**
Model AE-15, 8 lbs. Tan vinyl-clad steel cabinet. **$6.95**

AJ-43D SPECIFICATIONS—FM SECTION (Monaural Only): Tuning range: 88 to 108 mc. **Intermediate frequency:** 10.7 mc. **Antenna:** 300 ohms balanced, internal line antenna provided. **Quieting sensitivity:** (400 cps, 100% mod.) 1.5 uv for 20 db of quieting; 2 uv for 30 db of quieting; 3 uv for full quieting, 40 db. **Image rejection:** 35 db. **IF rejection:** 75 db. **Capture ratio:** 3 db. **AM suppression:** 35 db. **Bandwidth (Complete Tuner):** 325 kc at 6 db down, 1000 uv input. **Detector bandwidth (Peak-to-Peak):** 600 kc. **Harmonic distortion:** Less than 1% (IHF). **Hum & noise:** (Complete tuner) 55 db below full quieting (IHF). **Output impedance:** (Emitter Follower) Variable to 3000 ohms. **Output voltage:** 1 V. @ 1000 uv, 400 cps 100% mod. **FM STEREO CONVERTER SECTION: Converter bandpass:** 50 cps to 53,000 cps, ±¼ db. **Channel separation:** 40 db @ 50 cps to 2,000 cps; 30 db @ 10,000 cps; 20 db @ 15,000 cps. **19 KC suppression:** 50 db down. **38 KC suppression:** 45 db down. **SCA rejection:** 30 db min. 64 kc to 70 kc. **Hum & noise:** 55 db down. **Output voltage:** 1 V. @ 100 uv input, 400 cps, 100% mod. **Output impedance:** (Emitter Follower) Variable to 3000 ohms each channel. **AM SECTION: Tuning range:** 535 to 1620 kc. **Intermediate frequency (IF):** 455 kc. **Sensitivity:** 600 kc, 7 uv for 10 db. S/N; 1000 kc, 4 uv for 10 db S/N ; 1400 kc, 3 uv for 10 db S/N. **Antenna:** Built-in rod with provisions for external straight wire. **Image rejection:** 50 db at 600 kc; 70 db at 1400 kc. **IF rejection:** 55 db at 600 kc.; 65 db at 1400 kc. **10 KC rejection:** 40 db. **Harmonic distortion:** Less than 2%. **Hum & noise:** 30 db below 30% mod. **Output impedance:** (Normal) Variable to 3000 ohms; (Aux.) Variable to 4000 ohms. **Output voltage:** 1 volt nominal. **Dimensions:** 15½" W x 5¼" H x 14¼" D.

NO MONEY DOWN UP TO $300

Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

You've Never Heard "Jingle Bells" Until You've Heard It With 100 Watts Of Transistor Stereo Music Power . . . Heathkit Deluxe All-Transistor Stereo Amplifier

POWER AS YOU LIKE IT . . . AS MUSIC DEMANDS . . . from the delicate pianissimo to resounding fortissimo . . . for the most inefficient speakers . . . solid power, uncompromising . . . instantly ready from the AA-21D . . . first in transistor stereo amplifiers . . . finest in value.

COMPLETE CONTROLS On the front panel, those you use most often . . . 5-position source switch, 5-position mode switch, dual-concentric volume control, dual-concentric bass and treble controls. Concealed but accessible behind the hinged lower panel . . . tape-monitor input switch, speaker phase reversal switch, loudness switch (converts volume control to loudness control for compensated low volume levels), plus controls for all inputs.

COMPLETE INPUTS AND OUTPUTS . . . inputs for tapehead, magnetic phono, tuner, stereo tuner, tape monitor, and auxiliary . . . outputs for 4, 8, and 16 ohm speakers plus tape recorder . . . all on the rear chassis panel.

ADVANCED CIRCUITRY. Transformerless output circuit and multiple feedback loops assure fine fidelity, low distortion, minimum phase shift. Easy to build with preamp components encapsulated in 6 epoxy-covered modules.

BRING YEARS OF NATURALLY BETTER MUSIC TO YOUR HOME . . . order the AA-21D this Christmas. It does wonders for all music . . . including "Jingle Bells."

Kit AA-21D, 23 lbs., everything except a cabinet,
no money down, $13 mo. **$137.00**
Model AE-11, 8 lbs. . . . walnut wood cabinet. **$12.95**
Model AE-15, 8 lbs. . . . tan vinyl-clad steel cabinet. **$6.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-21D SPECIFICATIONS—RECOMMENDED SYSTEM MATES: Separate Speaker: AS-183, pg. 21. Speaker Systems: AS-2AU, AS-10, pg. 22. All changers & turntables, ppg. 19-20. **Power output per channel:** (Heath Rating) 35 watts/8 ohm load, 26 watts/16 ohm load, 18 watts/4 ohm load; (IHF music power output) 50 watts/8 ohm load, 34 watts/16 ohm load, 25 watts/4 ohm load @ 0.7% THD, 1 kc. **Frequency response:** ±1 db from 13 cps to 25 kc @ rated output; ±3 db from 8 cps to 40 kc @ rated output. **Harmonic distortion (At rated output):** Less than 1% @ 20 cps, 0.5% @ 1 kc, 2.0% @ 20 kc. **Intermodulation distortion (At rated output):** Less than 1%, 60 & 6,000 cps signal mixed 4:1. **Hum & noise:** Tapehead, 40 db below rated output; Mag. phono, 45 db below rated output; Aux. inputs, 60 db below rated output; Tape monitor, 7 db below rated output. **Channel separation:** 40 db min. @ 20 kc, 55 db min. @ 1 kc, 50 db min. @ 20 cps. **Input sensitivity:** (For 35 watts output per channel, 8 ohm load) Tapehead, 2 mv, Mag. phono, 3 mv; Tuner, 250 mv; FM Stereo, 250 mv; Aux., 250 mv; Tape Monitor, 0.6 V. **Input impedance:** Tapehead, 60 k ohm; Mag. phono, 30 k ohm; Tuner, 100 k ohm; FM Stereo, 100 k ohm; Aux, 100 k ohm; Tape monitor, 47 k ohm. **Outputs:** 4, 8, & 16 ohms and low impedance tape recorder outputs. **Controls:** 5-pos. Selector (dual-concentric), 5-pos. Mode switch, dual-concentric Volume, Bass & Treble controls, Tape monitor sw., Loudness sw., Phase sw., Input level controls (all inputs except Tape Head & Tape Monitor inputs), Push-Push on/off switch. **Semiconductor complement:** 26 Transistors, 10 diodes. **Power requirements:** 105-125 volts, 50-60 cycles AC. 35 watts idling, no signal; 200 watts, full power out, @ 120 volts with no load on AC receptacles. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15½" W x 5¼" H x 14" D.

Heathkit® Transistor Stereo

HEATHKIT®

AJ-33A
$94.50

AA-22
$99.95



Slim, Compact Styling . . . Cool, Instant "Transistor Sound" . . . Money-Saving Value . . . Heathkit AJ-33A All-Transistor AM/FM/FM Stereo Tuner!

• 23-transistor, 8-diode circuitry • Built-in stereo demodulator • AFC for drift-free reception • Stereo indicator light • Filtered stereo outputs • Stereo phase control for maximum separation, minimum distortion • Luxurious walnut cabinet included • Matches AA-22 amplifer

"TRANSISTOR SOUND" AT LOWER COST! The music, news and sports of AM . . . the quiet, crystal-clear beauty of FM . . . the exciting realism of FM stereo! No matter what you choose, it sounds better on this low-cost Heathkit All-Transistor Stereo Tuner. Its 23-transistor, 8-diode solid-state circuitry produces a clean, natural sound that's free from microphonics and distortion. And you enjoy cool, instant operation; long dependable life; and lower power consumption. You'll like its compact size and price, too . . . only $94.50.

ADVANCED FEATURES FOR VERSATILE PERFORMANCE! There's a built-in stereo demodulator; automatic stereo indicator light; AGC for even, steady volume; AFC for drift-free reception; adjustable FM squelch to nullify between-station noise when tuning; a Stereo Phase Control for maximum stereo separation, minimum distortion; filtered Left & Right channel outputs for direct beat-free stereo recording; a tuning meter, illuminated slide-rule dial, and flywheel tuning for precision station selection; and a voltage regulated power supply for high stability.

CONCEALED, EASY-TO-REACH SECONDARY CONTROLS! A hinged lower front panel conceals all secondary controls to avoid accidental system setting changes.

LUXURIOUS WALNUT CABINET INCLUDED! The clean, compact styling of the AJ-33A with pre-built walnut cabinet and extruded brushed gold-anodized aluminum front panel adds a touch of elegance to any room, enhances any decor! And with the prebulit, prealigned FM "front-end" tuner and AM-FM I.F. circuit board, assembly is fast and simple. Order yours now!

Kit AJ-33A, 16 lbs. . . no money down, $10 mo. **$94.50**

AJ-33A SPECIFICATIONS—FM SECTION: Tuning range: 88 to 108 mc. **Intermediate frequency:** 10.7 mc. **Antenna:** 300 ohm balanced or built-in line type. **Output impedance (Emitter follower):** Variable to 3000 ohms. **Output voltage:** 1.5 volts. **Quieting sensitivity:** 2 uv for 20 db; 3 uv for 30 db. **Audio frequency response:** 20-15,000 cycles ±3 db. **Harmonic distortion:** Less than 1%. **Image rejection:** 35 db. **Capture ratio:** 3 db. **AM suppression:** 35 db. **Hum & noise:** 50 db. **MULTIPLEX SECTION: Converter bandpass:** ±¼ db 50 to 53,000 cps. **Channel separation:** 30 db from 50 to 2 kc and 25 db at 10 kc. **AM SECTION: Tuning range:** 535 to 1620 kc. **Intermediate frequency:** 455 kc. **Usable sensitivity:** 8 uv @ 1000 kc. **Antenna:** Built-in rod with provision for external straight wire. **Output voltage:** 0.25 V. with 90% modulation. **Image rejection:** 40 db @ 600 kc. **Harmonic distortion:** Less than 2% (30% mod. @ 1 mv input). **Hum & noise:** 40 db. **GENERAL SPECIFICATIONS: Tuning indicator:** Meter. **Controls:** Tuning; Right Channel level; Left Channel level; FM squelch; Stereo converter—balance, separation and phase. **Switches:** Mode, AFC, Noise filter, SCA filter, local-distance. **Transistors & diodes:** 23 transistors, 8 diodes. **Power supply:** Transformer operated, full wave rectifier. **Power requirements:** 105-125 volts, 50/60 cycles, 7 watts. **Dimensions:** 15⅝" W x 3¾" H x 11½" D.

66-Watts Of Music Power . . . Heathkit AA-22 All-Transistor Stereo Amplifier!

• 20-transistor, 10-diode circuit • Delivers a full 66 watts of IHF Music Power • Wide-range response ±1 db, 15 cps to 30 kc • Less than 1% distortion • 5 stereo inputs for any program source • Concealed secondary controls behind hinged lower front panel • Low-silhouette styling • Handsome preassembled walnut cabinet • Perfect match to Heathkit AJ-33A Tuner

LUXURY LISTENING! Fast, effortless transient response. Instantaneous bursts of power as the music demands. Pure, uncompromising naturally beautiful sound . . . the kind only transistors can give you. Add cool, instant operation, freedom from microphonics, and long, unchanging transistor life. This is solid-state performance. This is the performance of the Heathkit AA-22 Transistor Stereo Amplifier . . . all for only $99.95!

PLENTY OF POWER! A full 40 watts continuous, 66 watts IHF music power at ±1 db from 15 to 30,000 cps into a regular 8 ohm load. More than enough for any stereo task!

HANDLES ANY PROGRAM SOURCE! 5 stereo inputs accommodate stereo mag. phono, stereo-mono tuners, stereo tape recorders and two auxiliary sources. In addition, there are outputs for 4, 8 & 16 ohm speakers, plus tape recorders. A transformerless output circuit assures greater stability and efficiency. The front panel controls include a 5-position selector switch, a 3-position mode switch, dual-tandem volume, bass and treble controls and a push-push power switch. And the hinged lower front panel conceals all secondary controls such as the input level controls, balance control, and speaker phase switch . . . no need to worry about accidental setting changes.

MODERN "LOW-SILHOUETTE" STYLING! Beautiful factory-assembled walnut cabinet with extruded aluminum brushed gold front panel . . . matches the AJ-33A tuner! Get both units in time for good Christmas listening now!

Kit AA-22, 22 lbs. . . no money down, $10 mo. **$99.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-22 SPECIFICATIONS—Recommended system mates: Speaker systems: AS-10 & AS-51, pgs. 22-23; separate speaker: AS-183 pg. 21; all changers, ppg. 19-20; tuner: AJ-33A, left. **Simultaneous power output per channel:** (Heath Rating) 20 watts/8 ohm load, 13 watts/16 ohm load, 9 watts/4 ohm load. (IHF music power output) 33 watts/8 ohm load; 18 watts/16 ohm load, 16 watts/4 ohm load @ 0.7% THD, 1 kc. **Power response:** ±1 db from 15 cps to 30 kc @ rated output. ±3 db from 10 cps to 60 kc @ rated output. **Harmonic distortion:** (at rated output) less than 1% @ 20 cps. 0.3% at 1 kc, 1% @ 20 kc. **Intermodulation distortion:** (at rated output). Less than 1%, 60 and 6,000 cps signal mixed 4:1. **Hum and noise:** Mag phono, 50 db below rated output. Aux inputs 65 db below rated output. **Channel separation:** 40 db. @ 20 cps, 60 db @ 1 kc; 40 db @ 20 kc. **Input sensitivity:** (for 20 watts output per channel, 8-ohm load), Mag phono, 6 mv; Tuner, 250 mv; Tape Recorder, 250 mv; Aux 1, 250 mv; Aux 2, 250 mv. **Input impedance:** Mag phono, 35 K ohm; Tuner, 100 K ohm; Tape Recorder, 100 K ohm; Aux 1, 100 K ohm; Aux 2, 100 K ohm. **Outputs:** 4, 8 and 16 ohm and tape recorder outputs. **Controls:** 5-position selector switch, 3-position mode switch, dual tandem volume, bass and treble controls, phase switch, input level controls, push-on push-off switch. **Semi-conductor complement:** 20 transistors, 10 diodes. **Power requirements:** 105-125 volts, 50-60 cycles AC 25 watts idling, no signal; 105 watts, full power output @ 120 volts with no load on AC receptacles. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15⅝" W x 3¾" H x 11⅜" D (allow 1½" extra for rear projections).

New Low Cost Transistor Stereo



Breakthrough! This New Heathkit Solid State FM Stereo Tuner Assembles Easily In Six Hours Or Less, Performs Like An Expensive Factory Built Model, And Costs Just $49.95!

• 14-transistor, 5 diode circuit for cool, instant operation, and the natural beauty of transistor sound • Stereo phase control to maximize stereo separation, minimize distortion • 4-stage IF section insures high sensitivity & selectivity • Filtered outputs for direct "beat-free" stereo recording • Automatic stereo indicator light • Prealigned, preassembled "front-end" tuner & one-circuit board for fast, simple assembly • Install any of 3 ways . . . wall, custom or either Heath cabinet

EXTRAORDINARY! Imagine an FM Stereo Tuner with an all-transistor circuit which you can build in six hours or less! With performance that equals much more costly tuners yet costs only $49.95 to achieve! It's all fact with the new Heathkit AJ-14.

PROFESSIONAL SOLID-STATE CIRCUITRY. Delivers clean, natural sound, without microphonics, without heat . . . traits no old-fashioned tube tuner can duplicate. 14 transistors and 5 diodes . . . no short cuts . . . with 3 transistors used in the "front end" tuning section . . . 4 transistors in the I.F. section . . . to produce sensitivity and selectivity comparable to much more expensive tuners. Solid-state transformer-operated power supply, too. Plus filtered outputs for clean tape recordings.

EASY TO OPERATE—JUST 4 CONTROLS. Up front, simple to use, are an On-Off switch, Tuning knob, Mono-Stereo switch, and Stereo Phase control. For added convenience: an automatic stereo indicator light, edge-lighted slide-rule dial, flywheel tuning.

EASIEST OF ALL TO BUILD. Preassembled and aligned "front-end" . . . one circuit board to assemble and some miscellaneous parts to mount . . . from pack to performance in 6 hours or less.

VERSATILE INSTALLATION. Custom mount it in wall, your cabinet, or either of the Heath cabinets below.

Kit AJ-14, 6 lbs. . (less cab. for custom mtg.)
no money down, $5 mo. **$49.95**

Model AE-35, 4 lbs., beige metal cabinet
(12-3/16" W x 9¼" D x 3⅛" H) **$3.50**

Model AE-25, 4 lbs. . . genuine walnut veneer cabinet
(12-9/16" W x 9¼ D x 3⅜" H) **$7.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-14 SPECIFICATIONS (RATED IHF STANDARDS)—Tuning range: 88 to 108 mc. **Antenna input impedance:** 300 ohm, balanced input. **Sensitivity (IHF):** 5 microvolts. **Intermediate frequency:** 10.7 mc. **Audio frequency response (IHF):** —3 db to +0 db. (20 to 15,000 cps.) **Hum and noise (IHF):** —50 db. **Output impedance:** 20 K ohm. **Output voltage:** 0.7 volt with a 1,000 microvolt input signal. 400 cps with 100% modulation. **Harmonic distortion (IHF):** 1% or less. **Image ratio (IHF):** —45 db. **Capture ratio (IHF):** 3 db. **IF rejection (IHF):** —80 db. AFC. **Correction:** 150 kc per volt. **AM suppression (IHF):** —40 db. **Channel separation:** 30 db or more at 1,000 cps. (Channel separation is measured using a 98 mc, 1,000 microvolt input stereo signal that is 100% modulated.)

Destined To Be A Favorite . . . The New Heathkit 30 Watt All-Transistor Stereo Amplifier. Exceptional Performance . . . Assembles In 10 Hours or Less . . . Costs Only $59.95!

• 17 transistors, 6 diodes • ±1 db, 15 to 60,000 cps at 10 watts per channel continuous power (20 watts total) or 15 watts per channel IHF Music Power (30 watts total) • Concentric, clutched volume control • Tandem bass and treble controls • Edge-lighted control dial • Front panel stereo headphone jack

GOOD NEWS FOR BUDGET-BOUND MUSIC LOVERS! In the traditional Heath concept of fine performance for less cost . . . this new Heathkit 30-watt all-transistor stereo amplifier. Here is performance comparable to factory built units selling for one hundred dollars . . . yet you pay only $59.95.

SOLID-STATE CIRCUITRY. Two identical, but separate, preamplifiers and power amplifiers using 17 transistors and 6 diodes produce 30 watts of hi-fi rated power, ±1 db, throughout the extremely wide range of 15 to 60,000 cps . . . remarkable in any amplifier, unheard of until now in an amplifier of this low price. New transformerless complementary output to insure extended response with minimum phase shift and lowest distortion. Power supply is regulated within 10% . . . rarely found even in more expensive amplifiers.

PROFESSIONAL FEATURES. Six-position source switch with stereo and mono positions; concentric clutched volume control for independent adjustment of each channel if necessary for balance; full-range tandem controls for bass and treble boost and cut; edge-lighted dial indicating all functions; front panel mounted stereo headphone jack.

SMART, COMPACT STYLING. At last, truly bookshelf size . . . just 10¼" D x 3" H x 12" W. Handsome anodized front panel plus your choice of custom mounting or either of the Heath cabinets below.

EASY TO BUILD, EASY TO OWN. Fast circuit board construction . . . pack to performance in 10 hours or less!

Kit AA-14, 11 lbs., less cab. for custom mtg., no money dn., $6 mo. **$59.95**
Model AE-35, 4 lbs. . beige metal cab. (12-3/16" W x 9¼" D x 3⅛" H) **$3.50**
Model AE-25, 4 lbs. . . genuine walnut veneer cabinet
(12-9/16" W x 9¼" D x 3⅜" H) **$7.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-14 SPECIFICATIONS—Recommended system mates: All speakers & speaker systems, ppg. 21-22-23, except AS-2A & AS-2U; all changers & turntables, ppg. 19 & 20. **Continuous power output:** 10 watts each channel—20 watts total. **Music power output (IHF):** 15 watts per channel. **Output impedance:** 4 through 16 ohm. **Damping factor:** 50. **Hum and noise:** Photo: —60 db; Tuner: —70 db; Auxiliary: —63 db. **Frequency response:** 10 to 60,000 cps +1 db; 6 to 100,000 cps ±3 db. **Power response:** 15 to 50,000 cps ±1 db; 7 to 90,000 cps ±3 db. **Input sensitivity:** Phono: 4 mv; Tuner: 300 mv; Auxiliary: 300 mv. **Input impedance:** Phono: 47 K ohm; Tuner: 180 K ohm; Auxiliary: 180 K ohm. **Channel separation:** 45 db or better. **Total harmonic distortion** (at Full Output): .5% or less @ 1000 cps, 1% or less @ 20 & 20,000 cps. **Intermodulation distortion** (at Full Output): Less than 1% (60 and 6,000 cps, 4:1). **Phono equalization:** RIAA. **Front panel:** 6-Position Source Switch: Mono phono; Stereo phono; Mono tuner; Stereo tuner: Mono Auxiliary; Stereo Auxiliary; Volume Control; Bass Control; Treble Control; Phone Jack. **Rear panel:** Fuse, AC Power Socket; Switched & Unswitched. Speaker Terminal Block: One Left & One Right Speaker. Ground Terminal: 1. Triple Phone Socket. **Power requirements:** 105-125 volts, 50/60 cps; 20 watts idling; 60 watts full output; (No load on AC power socket). **Dimensions:** Overall 12" W x 3" H x 10¼" D. **Mounting position:** Horizontal or vertical; cutout required 11¾" x 2⅞"; depth required from front of mounting surface 9¾".

Deluxe Tube-Type Stereo

HEATHKIT



Deluxe Heathkit "Tube-Type" AM/FM/FM Stereo Tuner . . . Ideal Gift For The Music Lover!

• Built-in FM multiplex adapter • Broad-band circuitry for full fidelity • Automatic FM Stereo indicator light • Adjustable Automatic Frequency Control for drift-free reception • Stereo phase control for maximum separation and lowest distortion • Adjustable FM squelch circuit for low noise between stations • Preassembled tuning unit, prealigned coils

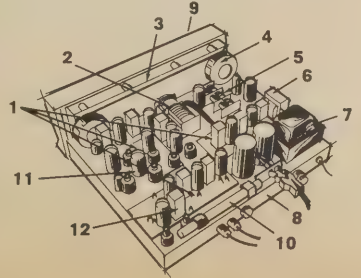
DELUXE FEATURES FOR DELUXE PERFORMANCE! Compare the price and features of this renowned Heathkit Stereo Tuner. Here is deluxe styling with luggage-tan vinyl-clad steel cabinet, polished anodized trim & refracted lighting of the big slide-rule dial . . . matches the Heathkit AA-100 amplifier! Here are convenience features for easy operation, finer performance. Just flip a switch and choose FM, FM stereo, or AM listening. In addition there's an automatic stereo indicator light, built-in stereo adapter, automatic frequency control for clear, drift-free reception, adjustable FM squelch to assure complete silence while tuning, and a stereo phase control for maximum station separation, minimum distortion.

FOR ADDED CONVENIENCE, there are individual AM & FM tuning meters, flywheel tuning action, built-in antennas plus external antenna connectors, a fidelity switch for normal or maximum AM fidelity; and a preassembled, prealigned front-end to insure professional performance. Assembly takes just a couple of evenings!

CHOOSE THE VALUE LEADER IN "TUBE-TYPE" TUNERS! Choose the AJ-41 now!

Kit AJ-41, 26 lbs. . . . no money dn., $11 mo. **$112.50**

AJ-41 SPECIFICATIONS—FM: Tuning range: 88 mc to 108 mc. **I.F. frequency:** 10.7 mc. **Frequency response:** ±2 db, 20 to 20,000 cps. **Antenna:** 300 ohm balanced (for internal or local reception). **Output voltage:** Nominal .5 volts (with 3 uv 30% modulation in). **Quieting sensitivity:** 2 uv for 20 db of quieting, 20 uv for full quieting (40 db). **Maximum deviation sensitivity:** 5 uv; (400 cycle 100% modulation). **Deviation sensitivity:** 20 kc (1100 uv in). **Harmonic distortion:** Less than 1% (1100 uv 400 cycle 100% modulation). **Image ratio:** 40 db. **AFC correction factor:** 12 db. **Amplitude modulation suppressions:** 25 db. **Hum & noise:** 40 db below 30% modulation (20 uv in). **SPECIFICATIONS MULTIPLEX—Audio frequency response:** ±2 db, 50 to 15,000 cps. **Sub-carrier bandpass:** ±3 db 23,000 to 53,000 cps. **Channel separation:** 30 db. **Hum & Noise:** —55 db (relative to 1 volt rms output). **Output impedance:** Cathode follower, variable to 4,000 ohms (each channel). **SPECIFICATIONS AM—Sensitivity, narrow bandwidth positions:** 1400 kc, 3 uv; 1000 kc, 4 uv; 600 kc, 8 uv (standard IRE dummy antenna, .1 volt RMS reference output). **Sensitivity change, narrow to broad position:** —5 db. **I.F. bandwidth, narrow:** 14 kc. 6 db down. **Broad:** 20 kc, 6 db down. **Image ratio:** 1400 kc 50 db; 600 kc 75 db. **Harmonic distortion:** Less than 1%. **Hum & Noise:** 35 db below 30% modulation (1000 kc unmodulated with 100 uv in). **I.F. rejection ratio:** 1400 kc 42 db; 600 kc 38 db. **Power supply:** Transformer operated, 117 v., 50-60 cycle, 100 watts. **Dimensions:** 5¼" H x 15½" W x 14¼" D.



1. 3 Circuit Boards for easy assembly. 2. Three-section AM tuning capacitor. 3. Illuminated slide-rule tuning dial. 4. Flywheel tuning for easy station selection. 5. Prealigned FM tuning unit. 6. L-C power supply. 7. Heavy-duty power transformer. 8. High capacity filters for hum-free performance. 9. FM stereo separation control. 10. Built-in AM rod-antenna. 11. Prealigned coils. 12. Built-in Multiplex circuitry.

Deluxe Heathkit 60-Watt "Tube-Type" Stereo Amplifier . . . Offers Versatile Performance, Finger-Tip Convenience & Modern Styling!

• Rated at 50 watts rms, 60 watts IHF music power • 5 stereo inputs • Versatile controls • Mixed channel center speaker output • Separate monophonic phono input • Easy circuit board assembly • Matches the AJ-41 tuner in styling and performance

VALUE LEADER IN THE INDUSTRY! The versatile and powerful AA-100 features 5 pairs of inputs (magnetic cartridge, AM and FM tuners, stereo tape recorder, FM stereo tuner, and auxiliary); separate monophonic input; versatile controls (preamp input level, power amp input level, hum balance, ganged volume, balance and separation and separate concentric bass and treble controls); three different speaker impedances (4, 8, & 16 ohms); plus left, right, and center channel speaker outputs.

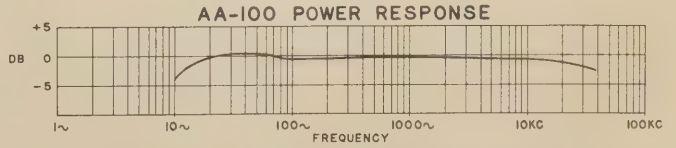
HANDSOME AND EASY TO OWN! The luggage-tan vinyl-clad steel cabinet with polished trim and soft refracted lighted slide-rule dial matches the AJ-41 styling (left). You enjoy this . . . deluxe features, performance and styling . . . at the unbelieveable low price of $84.95! No wonder the AA-100 is truly the value leader in the industry! Check its specs, then order yours today!

Kit AA-100, 34 lbs. . . . no money dn., $9 mo. **$84.95**

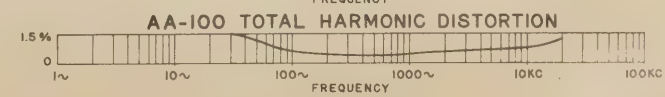
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-100 SPECIFICATIONS—Channels: 2. **Power output:** 50 watts (25 w. per channel) Heath Hi-Fi Rating; 60 watts (30 w. per channel) IHF Music Power Output (0.7% THD, 1 kc). **Power response:** ±1 db from 30 cps to 15 kc at 25 watts output per channel. **Harmonic distortion:** Less than 0.5% at 25 watts, 1 kc. Less than 2% at 25 watts, 30-15,000 cps (each channel). **Intermodulation distortion:** Less than 1% at 25 watts, 60 and 6,000 cps signals mixed 4:1 (each channel). **Hum and noise:** Mag phono, 55 db below 25 watts output at 6 mv sensitivity. Tape Head, 35 db below 25 watts output. Tuner and aux. inputs 70 db below 25 watts output. **Channel separation:** 42 db min. at 1 kc. **Input sensitivity:** For 25 watts output per channel; mono mag. phono, 1.5 mv; stereo mag. phono, 1.5 mv; tape head, 1 mv; tuner, 0.2v.; aux. 1 & 2, 0.2v. **Input Impedance:** Mag phono, 47 K ohms (may be changed); tape head, 470 K ohms; tuner & aux., 250 K ohms each. **Outputs:** 4, 8 and 16 ohms; cathode follower tape recorder outputs. **Damping factor:** 15. **Controls:** Function switch (4-position); selector switch 6-position); balance control (total range, 16 db); separation control; ganged level controls; dual-concentric base & treble controls, phase and power switch. **Power requirements:** 105-125 volts, 50-60 cycles, 150 watts. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 5" H x 15¼" W x 13½" D. (allow 1" for cables at rear).

AA-100 POWER RESPONSE



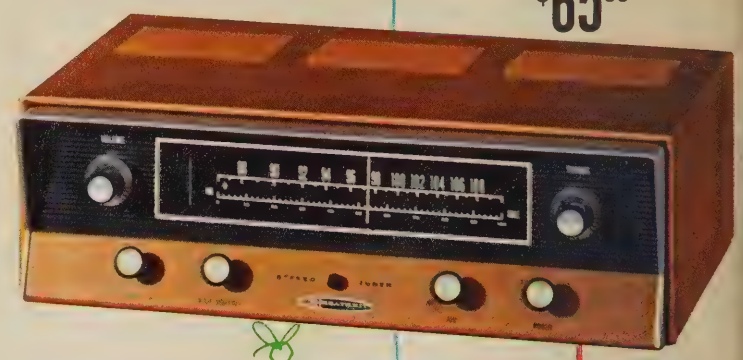
AA-100 TOTAL HARMONIC DISTORTION



Heathkit® "Tube-Type" Stereo...Big Value

For The Beauty Of FM/FM Stereo At Low Cost, Choose This Compact Heathkit AJ-12 Tuner!

AJ-12
$65.95



PERFORMANCE & FEATURES MATCH UNITS COSTING TWICE ITS PRICE! The built-in FM Multiplex Converter... a Stereo Indicator Light... Stereo Phase Control that minimizes distortion, maximizes separation... Automatic Frequency Control for beautifully quiet, drift-free reception... bar-type "eye" tuning indicator for pin-point tuning... edge-lighted slide-rule dial ... smooth flywheel tuning... filtered stereo tape recorder outputs.

QUICK, SIMPLE CONSTRUCTION... DESIGNER STYLING! Circuit-board construction plus a prealigned, prebuilt "front-end" makes assembly quick, easy & neat! The steel cabinet is clad in luggage-tan vinyl with a charcoal gray front panel and polished trim. Matches AA-151 Amplifier below.

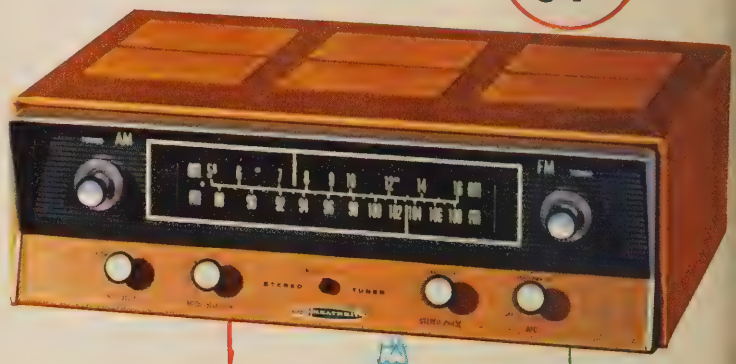
Kit AJ-12, 19 lbs...no money down, $7 mo.....**$65.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-12 SPECIFICATIONS — FM SECTION: Tuning range: 88 mc—108 mc. **Intermediate frequency:** 10.7 mc. **Antenna:** Balanced input for external 300 ohm antenna. Internal line antenna. **Output voltage (30 microvolts—30% Mod.):** 1 volt. **Image ratio (30 microvolts—30% Mod. —98 mc):** —45 db. **Harmonic distortion (25 microvolts —100% Mod. —98 mc):** Less than 1%. **IF rejection (98 mc):** —65 db. **FM audio response (20-20,000 cps):** ±1 db. **AFC correction factor (Full AFC):** 100 kc per volt. **AM suppression:** —27 db. **Hum and noise (25 microvolts, 30% Mod.):** —48 db. **Quieting Sensitivity:** 20 db—2½ microvolts; 30 db 3½ microvolts; 48 db—30 microvolts (max. quieting). **FM STEREO CONVERTER SECTION: Audio frequency response:** ±2 db from 50 to 15,000 cps. **Sub-carrier bandpass:** ±3 db from 23,000 to 53,000 cps. **Channel separation:** 30 db or more at 1 kc; 25 db or more at 10 kc. **Hum and noise:** —55 db relative to 1 volt rms output. **Output impedance (Cathode Follower):** Variable to 4000 ohms, each channel. **Outputs:** Left Channel—Right Channel. **Size:** 5¼" H x 15¾" W x 10½" D.

• Built-in FM stereo circuit • FM stereo indicator light • Stereo phase control for maximum separation, minimum distortion • Adjustable AFC for drift-free reception • Bar-type "Eye" tuning indicator • Filtered stereo tape recorder outputs • Easy circuit-board assembly

Enjoy Complete Listening With This Top-Value Heathkit AM/FM/FM Stereo Tuner!

AJ-32
$84.95



ENJOY ALL-AROUND LISTENING IN ONE COMPACT UNIT AT LOW COST! Just a flick of a switch, and you're up-to-the-minute with the latest news, sports, and music of AM; or the relaxing, quiet beauty of FM or FM stereo!

ADDED PERFORMANCE AT TRADITIONAL HEATHKIT SAVINGS! In addition to the features listed opposite, enjoy the "added performance" of complete controls; the AM fidelity switch that selects desired bandwidth for maximum selectivity or fidelity; level controls that adjust to suit your amplifier; built-in AM & FM antennas plus outside terminals; and effortless flywheel tuning.

MATCHES THE AA-151 IN STYLING, PERFORMANCE! Handsomely housed in a sturdy steel cabinet clad in attractive tan vinyl with a charcoal gray front panel and polished trim... matches the AA-151 below!

EASY ASSEMBLY! The tuning unit is preassembled, prealigned for quick, simple construction. Order yours now!

Kit AJ-32, 23 lbs...No money down, $9 mo.....**$84.95**

AJ-32 SPECIFICATIONS—AM Section: Tuning range: 550 kc-1600 kc. **Usable sensitivity** (normal position): 1400 kc—10 microvolts (20 db of quieting); 1000 kc—15 microvolts (20 db of quieting); 600 kc—40 microvolts (20 db of quieting). **Output voltage** (750 microvolts—30% mod.): 1 volt. **Harmonic distortion:** (750 microvolts—95% mod.): Less than 1%. **Hum and noise:** (5000 microvolts, 30% mod.): 30 db. **FM Section: Tuning range:** 88 mc-108 mc. **Antenna:** Balanced input for external 300 ohm antenna. Internal line antenna. **Output voltage** (30 microvolts—30% mod.): 1 volt. **Harmonic distortion** (25 microvolts—100% mod.—98 mc): Less than 1%. **IF rejection** (98 mc): —65 db. **FM audio response** (20-20,000 cps): ±1 db. **AM suppression:** —27 db. **Hum and noise** (25 microvolts, 30% mod.): —48 db. **Quieting sensitivity:** 20 db—2½ microvolts; 30 db—3½ microvolts; 48 db—30 microvolts (max. quieting). **FM Stereo Converter Section: Audio frequency response:** ±2 db from 50 to 15,000 cps. **Subcarrier bandpass:** ±3 db from 23,000 to 53,000 cps. **Channel separation:** 30 db or more at 1 kc; 25 db or more at 10 kc. **Hum and noise:** —55 db relative to 1 volt rms output. **Output impedance** (cathode follower): Variable to 4000 ohm, each channel. **Size:** 5¼" H x 15¾" W x 11" D.

• Built-in multiplex converter • FM Stereo Indicator Light • Variable AFC for drift-free reception • 2 bar-type "Eye" tuning indicators • Stereo Phase Control for minimum distortion, maximum separation • Filtered stereo tape recorder outputs

A Favorite Of Thousands Of Audiophiles . . . Heathkit 32-Watt Stereo Amplifier!

AA-151
$59.95



EASY-TO-BUILD, EASY-TO-BUY! That's the AA-151! For ease of assembly, there are simple, step-by-step instructions and large "exploded" diagrams. For performance, there's the Heath patented ULTRA-LINEAR® output circuit for unusually fine specifications. And for good old-fashioned value, there's the easy-to-afford price of $59.95!

VERSATILE & FLEXIBLE PERFORMANCE! The AA-151 accepts *any stereo* or *mono* program source, offers complete finger-tip controls, and delivers 32 watts IHF music power! The 4-input selector switch lets you choose mag. phono, crystal phono, tuner, or auxiliary inputs. The 6-position mode switch allows choice of both or either stereo signal! In addition, there are ganged volume controls, ganged tone controls for bass & treble; speaker phase reversal switch, filament balance controls, and accessory AC outlets.

MODERN STYLING MATCHES AJ-12 & AJ-32! The steel cabinet is clad in tan vinyl with charcoal gray front panel and polished trim, matches the AJ-12 & AJ-32!

Kit AA-151, 30 lbs...no money down, $6 mo.....**$59.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-151 SPECIFICATIONS—Recommended System Mates: Separate Speakers, AS-163, pg. 21; Speaker Systems, AS-10, AS-51, pgs. 22-23; all changers & turntables, pgs. 19-20; Tuner, AJ-12 above. **Channels:** 2. **Power output:** 28 watts (14 w. per channel) Heath Hi-Fi Rating; 32 watts (16 w. per channel) IHFM Music Power Output (0.7% THD, 1 kc). **Power response:** ±1 db from 20 cps to 20 kc at 14 watts output per channel. **Harmonic distortion:** Less than 2%, 30 cps to 15 kc at 14 watts output per channel. **Intermodulation distortion:** Less than 2% at 14 watts output per channel using 60 cps and 6 kc signal mixed 4:1. **Hum and noise:** Mag. phono input, 55 db below 14 watts; Tuner and crystal phono 65 db below 14 watts. **Channel separation:** Better than 45 db. **Input sensitivity:** For 14 watt output each channel (tone controls in "Flat" position): mag. phono, 0.004 volts at 1 kc; crystal phono, 0.2 volts; tuner and aux., 0.2 volts. **Outputs:** 4, 8 and 16 ohms. **Damping factor:** 10:1. **Controls:** Dual clutched volume, ganged bass; ganged treble; 4-position source selector; 6-position mode selector; speaker phasing switch. **Tube complement:** 2-6EU7, 2-6AU6, 2-6AN8, 4-EL84/6BQ5, 1-GZ34/5AR4. **Power requirements:** 117 volts, 50-60 cycles, 130 watts. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15¾" W x 5¼" H x 11" D.

• Two hi-fi rated 14-watt channels, Preamps and power amps • Operates stereo or monophonic • Accepts four stereo music sources • Front panel controls • Patented Heath Ultra-Linear® circuit • Matches Heathkit AJ-12 & AJ-32 Tuners

Gifts At Budget Saving Prices

HEATHKIT

Decorator-Styled FM/FM Stereo Tuner . . . Simple To Operate . . . Easy On The Budget!

• Built-in FM stereo circuitry • FM stereo indicator light • Automatic Frequency Control for drift-free reception • Preassembled, prealigned "front-end" & point-to-point wiring for fast, easy construction • New mocha brown, beige & black color styling

CONSIDERING A GOOD STEREO TUNER THAT WON'T BREAK YOUR BUDGET? Consider the new Heathkit AJ-13 FM/FM Stereo Tuner. It's engineered to please the discriminating ear, yet priced to delight the economy-minded . . . only $47.00! And coupled with the matching AA-32 amplifier below, you have the electronics for a complete stereo system. Just add two speakers & enjoy!

AND IT'S SO EASY TO OPERATE! Just three simple controls to adjust . . . On/Off-FM-Stereo selector, tuning control, and AFC On/Off switch. Yet, you enjoy features like AFC for drift-free reception . . . stereo indicator light . . . edge lighted slide-rule dial and smooth flywheel tuning for quick, easy station selection . . . filtered outputs for stereo tape recording . . . plus point-to-point wiring and a prebuilt, prealigned "front-end" for fast, simple construction!

YOU'LL LIKE THE MODERN COLOR STYLING, TOO . . . mocha brown, all-steel cabinet with a neutral beige front panel and black trim accents.

NOW SETTLE BACK, RELAX & LISTEN! The sound's superb . . . the styling stunning . . . the savings sensational! Order yours now!

Kit AJ-13, 14 lbs. . . no money down, $5 mo. **$47.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.



AJ-13

$47.00

AJ-13 SPECIFICATIONS—Tuning range: 88 to 108 mc. **Intermediate frequency:** 10.7 mc. **Quieting sensitivity:** 2½ uv for 20 db of quieting; 3½ uv for 30 db of quieting; 30 uv for 48 db of quieting (full quieting). **Audio frequency response:** Mono—±1 db from 20 to 20,000 cps. Stereo—±2 db from 50 to 15,000 cps. **Antenna:** Balanced input for external 300 ohm antenna. **Hum & noise:** 50 db for 1000 uv, 100% modulation. **Output impedance:** 47 K ohm. **Output voltage:** 1 volt for 1000 uv, 100% modulation 98 mc input. **Outputs:** Left and right channels. **Harmonic distortion:** 1% or less for 1000 uv, 100% modulation 98 mc input. **Image ratio:** 40 db for 30 db of usable sensitivity at 100% modulation 98 mc input. **Capture ratio:** 8 db for 1000 uv, 100% modulation, 98 mc input. **IF rejection:** 55 db at 98 mc. **AFC correction:** 100 kilocycles per volt. **AM suppression:** —27 db. **Subcarrier bandpass:** ±3 db from 23,000 to 53,000 cps. **Channel separation:** 25 db or more at 1000 cps. **Tube complement:** 6C9 RF amplifier, mixer, osc.; (3) 6AU6 1st and 2nd IF amplifier and limiter; (2) 12AU7 19 kc amplifier, cathode follower and subchannel amplifier, oscillator/doubler; 6BN8 ratio detector, audio amplifier. **Front panel controls:** Tuning; selector switch, power off-FM-stereo; AFC switch, off-on. **Power supply:** Transformer operated, with silicon diode rectifiers. **Power requirements:** 105-125 V. AC, 50/60 cps, 35 watts. **Dimensions: Overall:** 13½" W x 4 11/16" H x 9½" D.

Matching 20-Watt Stereo Amplifier . . . Operates With Magnetic & Ceramic Cartridges!

• Four stereo inputs . . . magnetic & ceramic cartridges, tuner & auxiliary • Furnishes 16 watts of continuous stereo power—IHF Music power output of 20 watts • Refreshingly styled in mocha brown and beige with black trim accents • Full-range controls . . . found only on more expensive equipment • Easy to build . . . goes from parts to performance in just a few evenings

PLENTY OF VERSATILITY! And yet a low price tag of only $39.95. That's the Heathkit AA-32 16-Watt Stereo Amplifier. Both the AA-32 & matching AJ-13 Stereo Tuner (above) are ideal for shelf mounting, or installing in a wall.

PLENTY OF UNDISTORTED POWER! A full 16 watts continuous, 20 watts IHF music power at ±1 db from 30 to 30,000 cps @ 8 watts per channel. Four stereo inputs handle mag. & ceramic phono cartridges, tuner, and auxiliary sources.

COMPLETE CONTROLS PUT YOU IN COMMAND! A dual concentric volume control permits adjustment of both channels simultaneously or individually . . . a mono/stereo switch for mode selection . . . a pair of full-range tandem-type tone controls allow simultaneous bass & treble adjustment on both channels . . . and a separate on/off power switch.

TWO PUSH-PULL POWER OUTPUT STAGES, plus 2 four-stage preamps highlight the 7-tube amplifying circuit. The power supply is a transformer-operated, full-wave doubler silicon-diode circuit.

SIMPLE TO BUILD with point-to-point wiring & easy to follow instructions. Enjoy a top-notch stereo system at low cost . . . add both units now!

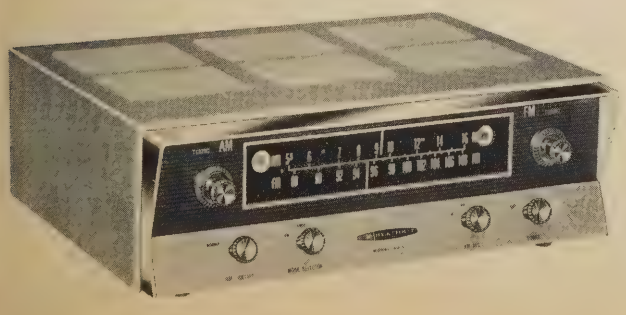
Kit AA-32, 16 lbs. . . no money down, $5 mo. **$39.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.



AA-32

$39.95

AA-32 SPECIFICATIONS—Recommended System Mates: Speakers: AS-193, AS-81, pg. 23; AS-163, AS-133, AS-123, pg. 21. Speaker Systems: AS-22, AS-51, AS-81, pgs. 22-23. **Simultaneous power output per channel:** 8 watts (16 watts total); IHFM Music Power Output per channel: 10 watts (20 watts total). **Frequency response:** ±1 db from 30 cps to 30,000 cps at rated output. **Harmonic distortion:** (at rated output) 2% @ 30 cps, 0.7% @ 1000 cps, 2% @ 15,000 cps. **Intermodulation distortion:** (at rated output) Less than 3% using 60 and 6000 cps mixed 4:1. **Hum and noise:** Mag. phono input 46 db below output. Aux. input, 65 db below rated output. **Channel separation:** 42 db @ 30 cps, 45 db @ 1000 cps, 30 db @ 15,000 cps. **Input sensitivity:** Mag. phono, 6 mv; Cer. phono, 250 mv; Tuner, 250 mv; Aux., 250 mv. **Input impedance:** Mag. phono, 47 K ohm; Cer. phono, 2.2 meg.; Tuner 470 K ohm; Aux. 470 K ohm. **Outputs:** 4, 8, and 16 ohm. **Damping factor:** 9. **Feedback:** 18 db. **Tube complement:** 3-6EU7 and 4-ECL-86 (6GW8). **Power requirements:** 105-125 V., AC 50-60 cps, 85 watts at 120 volts. **Dimensions:** 13½" W x 4 11/16" H x 9¼" D.



AJ-11

$65.95

Choose This "Bargain-Buy" AM/FM Mono Tuner For Superb Hi-Fi Enjoyment!

• Output for FM stereo adapter • Individual AM & FM tuning "eyes" • Adjustable AFC • Built-in antennas • Prealigned tuner

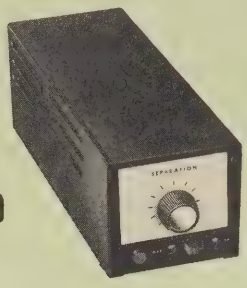
BUDGET-SAVER . . . FAMOUS AJ-11! Enjoy beautiful mono AM or FM! Features output for FM stereo adapter such as Heathkit AC-11 (page 18); adjustable Automatic Frequency Control for drift-free reception; two tuning "eyes" for pin-point tuning; and prealigned "front-end" for easy assembly. Styling & specifications for AM & FM similar to AJ-32, page 16.

Kit AJ-11, 21 lbs. . . no money down, $7 mo. **$65.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Low-Cost Heathkit® Monophonic Hi-Fi!



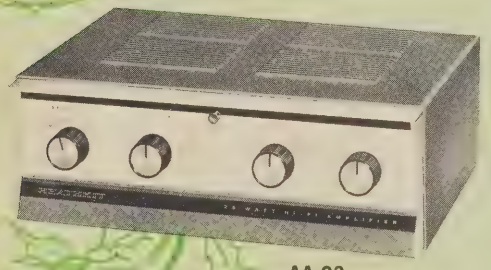
AJ-63
$37.50



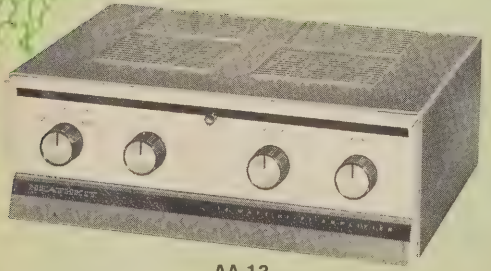
AC-11A
$23.50



AJ-53
$26.50



AA-23
$42.95



AA-13
$29.95

Economy FM Tuner . . . Handsome Styling . . . Converts To Stereo!

• Broad-band circuitry, converts to stereo with AC-11 Multiplex Converter (below) • New mocha brown & beige color styling with black trim • 5 tube circuit—9 tube function • Automatic Frequency Control for drift-free reception • Easy to build with factory assembled "front-end" tuner, pre-aligned IF transformer, & encapsulated circuit module

ADDITIONAL FEATURES include cathode follower output to minimize hum pick up & high frequency cable losses; limiter-ratio detector to assure clean, high fidelity FM reception; large, easy-to-read slide-rule dial and smooth flywheel tuning for precision station selection. Matches AA-13 & AA-23 amplifiers (below) in styling & performance!

Kit AJ-63, 10 lbs....no money dn., $5 mo.....**$37.50**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-63 SPECIFICATIONS—Tuning range: 88 to 108 mc. **Quieting sensitivity:** 2.5 uv for 20 db of quieting; 3.5 uv for 30 db of quieting; 25 uv for maximum quieting (38 db). **IF frequency:** 10.7 mc. **Image ratio:** 40 db. **AFC correction factor:** 75 kc per volt. **AM suppression:** 25 db. **Frequency response:** ±2 db, 20-20,000 cps. **Harmonic distortion:** Less than 1.5%, 1100 uv, 400 cycles 100% modulation. **Intermodulation distortion:** Less than 1%, 60 cycles and 6 kc; mixed 4:1 1100 uv, 30% modulation. **Antenna:** 300 ohms unbalanced. **Output impedance:** 600 ohms (cathode follower). **Output voltage:** Nominal .5 volt (with 30% modulation, 20 uv signal). **Power requirements:** 105-125 volts, 50/60 cycles AC at 30 watts. **Overall dimensions:** 4 1/16" H x 13 3/8" W x 7" D.

Add Stereo Realism To Your FM Tuner With A Heathkit Multiplex Converter!

• Use with any FM tuner having multiplex output • Compact . . . fits anywhere • Styled to match Heathkit tuners • Built-in power supply • Easy to build

FEATURES BUILT-IN POWER SUPPLY with silicon rectifier, 3 tubes, & prealigned coils. Balanced diode detector assures low distortion. Convert now . . . order yours today!

Kit AC-11A, black, 4 lbs.....**$23.50**

Kit AC-11B, tan, 5 lbs.....**$23.50**

AC-11 SPECIFICATIONS—Audio frequency response: ±2 db 50 to 15,000 cps. **Subcarrier bandpass:** ±4 db 23,000 to 53,000 cps. **Channel separation:** 30 db. **Hum and noise:** —55 db (relative to 1 volt rms output). **Input impedance:** 470 K ohms. **Output impedance:** 3000 ohms each channel (cathode follower output). **Input:** MULTIPLEX (from tuner). **Input signal voltage:** .4 volt minimum (from multiplex output of FM tuner). **Outputs:** LEFT CHANNEL; RIGHT CHANNEL. **Switch and controls:** OFF-ON switch; CHANNEL SEPARATION control; LEFT CHANNEL LEVEL control; RIGHT CHANNEL LEVEL control. **Power requirements:** 117 volts AC 50/60 cps. 12 watts. **Size:** 3 3/8" H x 3 3/8" W x 9 7/8" D.

For High Fidelity AM Reception, Choose This Attractive Heathkit Tuner!

• Extra-sensitive superhet circuit with tuned RF stage • Fidelity switch chooses normal or maximum bandwidth • Built-in transformer operated power supply with silicon rectifier for safety and long life • 10 kc whistle filter • Voltage doubler detector for lowest distortion • Quick & simple to build

ENJOY EXTRA PERFORMANCE FEATURES like a full-wave voltage doubler detector that assures lowest distortion; built-in high-gain ferrite antenna, plus external antenna terminals; heavy, die-cast flywheel tuning; easy-to-read lighted slide-rule dial; two outputs—"variable" cathode follower for direct driving of power amplifiers, and "fixed" cathode follower for use with preamplifiers; new mocha brown, beige & black color styling. Matches AA-13 & AA-23 amplifiers, below!

Kit AJ-53, 11 lbs....no money dn., $5 mo.....**$26.50**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-53 SPECIFICATIONS—Tuning range: 550 kc to 1600 kc. **Intermediate frequency:** 455 kc. **Sensitivity (for 20 db quieting IHFM standards):** 1000 kc—25 uv. **IF bandwidth (6 db down):** NORMAL—7 kc.; MAXIMUM—16 kc. **Output impedance (cathode follower):** 5000 ohms. **Input signal for 1 volt output:** 7 uv—30% mod. 1000 kc. **Image ratio:** 1000 kc—57 db. **Harmonic distortion (750 uv 95% mod.):** less than 2%. **Hum and noise (5000 uv —30% mod.):** 36 db. **IF rejection:** 1000 kc—69 db. **Power supply:** Transformer operated (fused). **Power requirements:** 117 V AC, 50/60 cycles at 19 watts. **Dimensions:** Overall—including cabinet and feet, 4 1/16" H x 13 1/4" W x 5 1/2" D.

30-Watt Mono Amplifier . . . Compact Size With King-Size Performance!

• Hi-Fi rated at 25 watts continuous power, 30 watts IHF music power rating • New mocha brown & beige color styling with black trim • Four front-panel selected inputs • ±1 db from 30 to 15,000 cps power response • Separate bass & treble controls • Bookshelf size for limited space installations • Easy to build

BOASTS FOUR SEPARATE INPUTS for microphone, mag. phono, crystal or ceramic phono cartridge, and auxiliary source. The output transformer is tapped for 4, 8 & 16 ohm speakers. Heavy-duty shielded power supply. Fixed-bias push-pull 7591 output tubes deliver full-rated output with minimum distortion. Matches AJ-63 & AJ-53 Tuners (above).

Kit AA-23, 20 lbs....no money dn., $5 mo.....**$42.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-23 SPECIFICATIONS—Power output: 25 watts Heath hi-fi rating; 30 watts IHFM music power rating (0.7% THD @ 1 kc). **Frequency response:** ±1 db, 30 cps to 15 kc, at 25 watts output. **Harmonic distortion:** Less than 2%, 30 cps to 15 kc at 25 watts output, and less than 0.7% at 1 kc at 25 watts output. **Intermodulation distortion:** Less than 2% at 25 watts using 60 cps and 6000 cps signals 4:1. **Hum & noise:** Microphone, —60 db or better; Mag. Phono, —53 db or better; Xtal Phono, —55 db or better; Auxiliary, —60 db or better. **Input sensitivity:** For 25 watts output with tone controls flat; Microphone, 9 mv; Mag. phono, 5 mv (at 1 kc); Xtal Phono, 120 mv; Auxiliary, 200 mv. **Outputs:** 4, 8, and 16 ohms. **Damping factor:** 9. **Controls:** 4-position selector switch, volume control, bass control and treble control with on/off switch. **Power requirements:** 105-125 volts, 50-60 cps, 120-135 watts. **Power outlets:** 1 AC receptacle, unswitched. **Indicator:** Neon pilot light. **Dimensions:** 13 1/2" W x 4 15/16" H x 9 1/2" D.

Heathkit 16-Watt Mono Amplifier . . . Ideal For That Extra Music System!

• New mocha brown & beige color styling with black trim • Patented Heath Ultra-Linear® circuit • Hi-Fi rated 14-watt output • 30 to 15,000 cps response ±1 db at full rated output • Separate bass & treble controls • Three inputs

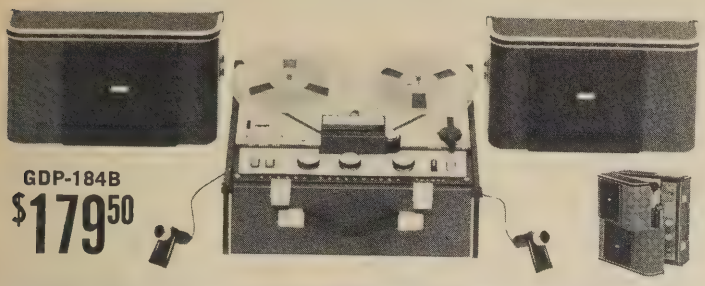
EASY TO OPERATE & BUILD! Features EL-84 power tubes & specially-designed output transformer for 4, 8 & 16 ohm speakers; filament balance control to minimize hum even at low volume levels; and miniature tubes for clean, neat circuit layout! Matches AJ-53 & AJ-63 Tuners (above).

Kit AA-13, 17 lbs....no money dn., $5 mo.....**$29.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-13 SPECIFICATIONS—RECOMMENDED SYSTEM MATES: Speakers: AS-51, pg. 23; AS-10, pg. 22. All turntables, pgs. 19 & 20. **Power output:** 14 watts Heath Hi-Fi Rating; 16 watts IHF Music Power Output (2% THD, 1 kc). **Frequency response:** ±1 db 30-15,000 cps, 14 watts output. **Harmonic distortion:** Less than 2%, 30 cps to 15 kc, at 14 watts output. **Intermodulation distortion:** 2% or less at 14 watts output using 60 and 6000 cps signals, 4:1. **Hum & noise:** Mag. phono input, 50 db below 14 watts; Tuner and crystal phono, 60 db below 14 watts. **Input sensitivity:** For 14 watts output; mag. phono, 0.004 v at 1 kc; crystal phono, 0.2 v; tuner 0.25 v. with tone controls flat. **Output:** 4, 8 and 16 ohms. **Damping factor:** 10:1. **Controls:** 3-position function selector switch, bass and treble tone controls, volume control. **Power requirements:** 117 v, 50-60 cycles, 55 watts. **Dimensions:** 4 15/16" H x 13 1/2" W x 10 1/2" D.

Famous-Name Stereo Accessories



GDP-184B
$179.50

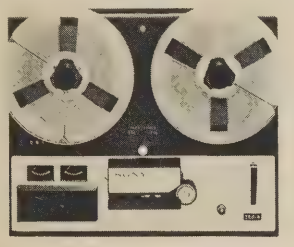
Sony 200-B Sterecorder . . . Detachable Speakers Form Lid For Suitcase Portability, Separate For Maximum Stereo!

• 4-track stereo & mono record & playback at 7½ & 3¾ ips • Full-range stereo speaker system • Sound-on-sound recording capability • Dynamically balanced capstan flywheel • Two V.U. meters • Automatic Tape Lifter • Pause control and digital tape counter • Full 7" reel capacity • FM stereo inputs • Built-in Stereo preamplifiers & power amplifiers

COMPARE ITS FEATURES! Boasts 4-track stereo and mono record and playback for complete operating versatility . . . Full range 2-speaker stereo system that combines to form carrying case lid . . . Sound-on-sound individual push button selection of channel 1 or 2 enables inter-channel transfer for multiple track or special effects recording . . . Dynamically balanced capstan flywheel with advanced "rim drive" principle—no belts to stretch or wear out . . . Two V.U. meters to assure accurate indication of recording level . . . Automatic tape lifter to protect heads from wear during fast forward & rewind operation . . . Pause control & digital tape counter for precise cueing, editing & tape indexing . . . Full 7" reel capacity . . . FM stereo inputs to record "off-the-air" from your FM stereo tuner . . . and built-in stereo preamplifiers and power amplifiers that can be used with external sound systems or as a public address system. Complete with portable carrying case & 2 Sony F-96 dynamic microphones. Not a kit.

Model GDP-184B, 53 lbs... No money down, $17 mo.....**$179.50**

GDP-184B SPECIFICATIONS—Power requirements: 70 watts 117 volts, 60 cycles (50 cycles optional). **Tape speeds:** 7½ and 3¾ ips. **Frequency response:** 50-14,000 cps @ 7½ ips; 50-10,000 cps @ 3¾ ips. **Flutter & wow:** Less than 0.19% @ 7½ ips; less than 0.25% @ 3¾ ips. **Signal to noise ratio:** Better than 45 db. **Level indication:** 2 VU meters. **Input provision:** 2 microphone; 2 high level. **Output provisions:** Pre-amp. Two 600 ohm high level; Power amp. Two 8 ohm external speakers & stereo headsets. **Transistor & tube complement:** (2) 2SD64, (1) 6267, (3) 30A5, (3) diodes. **Dimensions:** 15" W x 16" D x 9" H.



GDP-174A
$135.00

New Low-Cost Sony 250-A All-Transistor Sterecorder!

• 4 track stereo & mono record & playback at 7½ & 3¾ ips • All-transistor for instant operation, compact size • Operates in both horizontal or vertical positions • Two V.U. meters • Automatically shuts itself off at end of reel • Dynamically balanced capstan flywheel • Automatic tape lifter • Simple single-knob operation for all functions • Attractive walnut cabinet-base

Model GDP-174A, 23 lbs. . . no money dn., $13 mo.....**$135.00**

GDP-174A SPECIFICATIONS—Power requirements: 115 volts, 60 cycles (50 cycles optional). **Tape speeds:** 7½ and 3¾ ips. **Flutter & wow:** 0.19% @ 7½ ips; 0.25% @ 3¾ ips. **Frequency response:** 50-14,000 cps @ 7½ ips. **Signal to noise ratio:** 50 db or more. **Level indication:** 2 VU meters. **Inputs:** Microphone and line per channel. **Outputs:** High level line per channel. **Dimensions:** 14½" W x 6½" D x 9" H.

Rek-O-Kut Model B-12GH Turntable And Model S-320 Micropoise® Tone Arm!

• 3 Speeds . . . 33⅓, 45, & 78 rpm rim-driven • Ideal for broadcasting studios, professional musicians and audiophiles • Precision-built hysteresis synchronous motor . . . lifetime lubricated • Includes famous Rek-O-Kut S-320 stereo tonearm with exclusive Omni-Balance

Model ADP-25, turntable & tonearm, 22 lbs....no money dn., $14 mo.....**$144.90**
Model ADA-25W, walnut base, 8 lbs.....**$18.95**

ADP-25 SPECIFICATIONS—Speeds: 33⅓, 45 & 78 rpm. **Flutter & wow:** .09% rms. **Motor type:** Heavy-duty hysteresis synchronous, life-lubrication. **Color:** Decorator gray and 2-tone aluminum. **Power requirements:** 117 v. AC, 60 cycles AC. **Dimensions:** 17¾" wide, 16" deep, height above deck 3", 4¾" below. **TONEARM SPECIFICATIONS—Tracking:** 1 gram or less. **Tracking Error:** Less than 1°. **Bearings:** Horizontal & Vertical—chrome steel balls. **Resonance:** 9-12 cps. **Cartridge shell:** Plug-in, 4-wire type.



ADP-25
$144.90
(less base)

Dual 1009 Auto/Professional Turntable . . . Tracks & Trips At ½ Gram!

• Automatic tone-arm tracks below ½ gram, yet trips at zero • Permits almost 90° tilt without spilling a note • Anti-skate record protection • Automatically shuts off amplifier after play • Plays up to 10 records with less than 2/10 gram stylus force increase from first to last record • Can also be started manually while record is rotating or at a standstill • 7½ lb. dynamically-balanced platter

Choose a special 1c offer cartridge, below, or the new Shure M55E Elliptical Stylus cartridge for only $10 more!

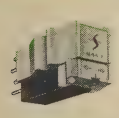
ADP-24, changer only, 21 lbs....no money dn., $10 mo.....**$99.50**
ADP-24, changer & choice of any 1c offer cartridge below (specify by model no.) 22 lbs....no money dn., $10 mo.....**$99.51**
ADA-24W, oiled solid walnut base, 3 lbs.....**$11.95**
ADA-24-1, 45 rpm spindle, 1 lb.....**$ 4.80**

ADP-24 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 and 78 rpm. **Turntable speed:** All 4 speeds accurate within 0.1% with one to ten records. **Motor type:** 4-pole induction, shock & vibration shielded. **Type of drive:** Friction. **Tracking force variations:** Less than 0.2 grams from 1st to 10th record. **Record capacity:** Up to 10 records. **Record sizes:** 7", 10", 12". **Control functions:** Manual Speed Selector; Manual Record Size Selector; Stop/Start Manual/Automatic switch. **Dimensions:** 10¾" x 12¾", 6" clearance above, 3" below. **Power requirements:** 117 VAC, 60 cps.



ADP-24
$99.51
(with cartridge)

Special 1c Offer Cartridges With Turntable Orders (specify by model no.)



Shure M44-7 15 Dynetic

AD-85B MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 cps. **Output:** 11 mv per channel. **Separation:** More than 25 db at 1 kc. **Load impedance:** 47,000 ohms per channel. **Stylus:** .018 mm diamond. **Compliance:** 20.0 x 10^{-6} cm per dyne. **Tracking force:** 1½ to 3 grams.
Model AD-85B, 1 lb.....**$19.95**



New! Sonotone 8TAFHC-SD "Ceramic"

AD-15K MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 cps. **Output:** .20 volt. **Separation:** 30 db. **Load impedance:** 1 to 5 megohms. **Stylus:** 0.7 mil diamond, 3 mil sapphire. **Compliance:** 15 x 10^{-6} cm/dyne. **Tracking force:** 1. 5-3 grams for professional arms; 3-4 grams for changers.
Model AD-15K, 1 lb.....**$7.26**



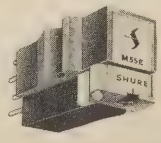
New! Empire 888 "Magnetic"

AD-125G MANUFACTURER'S SPECIFICATIONS—Frequency response: 12-25,000 cps. **Output:** 8 mv/channel. **Separation:** 30 db. **Load Impedance:** 47,000 ohms. **Stylus:** 0.7 mil diamond. **Compliance:** 10 x 10^{-6} cm/dyne. **Tracking Force:** ¾-6 grams. **Tracking Angle:** 15°.
Model AD-125G, 1 lb.....**$19.95**



Pickering V15/AT-2 "Magnetic"

AD-105J MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 cps. **Output:** 6.9 mv per cm/sec of recorded level. **Load resistance:** 47,000 ohms. **Stylus:** .7 mil diamond. **Tracking force:** 1 to 4 grams. **Vertical tracking angle:** 15°.
Model AD-105J, 1 lb.....**$19.95**



New!
Shure M55E
15° Stereo
Dynetic Cartridge
With Elliptical Stylus!

Elliptical diamond stylus and new 15° vertical tracking provide near perfect freedom from distortion, resulting in unmatched purity of sound. Low mass. Scratch-proof. Will track at forces of ¾ to 1½ grams. *Only $10 when you order with a Garrard Lab 80, Type A70, or Dual 1009 Turntable.*

Model AD-95R, 1 lb., no money dn., $5 mo.....**$35.50**

AD-95R MANUFACTURER'S SPECIFICATIONS — Frequency Response: 20 to 20,000 cps. **Output:** 6.6 mv per channel @ 1 kc. **Separation:** Over 25 db @ 1 kc. **Load Impedance:** 47,000 ohms per channel. **Stylus:** Elliptical 0.7 mil diamond **Compliance:** 25.0 x 10^{-6} cm/dyne. **Tracking force:** ¾ to 1½ grams.

Garrard Turntables And Changers



ADP-94
$99.51
(with 1c cartridge)

Garrard Lab 80 Automatic Turntable . . . Professional Features

• Insures professional reproduction of 33⅓ & 45 rpm records • Dynamically balanced "Afrormosia wood" tone arm with integral manual cueing device and adjustable tracking force • New adjustable bias compensator to track the lightest & most compliant cartridges accurately & without distortion • New isolated motor suspension • New anti-static turntable mat • New precision spindle handles up to 10 records of any size • Anti-skate protection

UNCOMPROMISING PERFORMANCE from virtually zero force trip capability, balanced turntable, isolated 4-pole motor, 5-point suspension, fingertip controls. Choose a cartridge (p. 19) for only 1c more!

ADP-94, 25 lbs., turntable only . . . no money down, $10 month **$99.50**
ADP-94, 26 lbs., turntable and choice of any 1c offer cartridge pg. 19 (specify by model no.) . . . no money down, $10 month **$99.51**
ADA-94-1, Garrard LRS9 45 rpm spindle, 1 lb . . . . . **$ 3.80**
ADA-94W, 5 lbs., walnut finished base, 16½" W x 13¾" D x 4¼" H . . . . . **$ 6.50**

ADP-94 SPECIFICATIONS—Speeds: 33⅓ & 45 rpm. **Motor:** 4-pole shaded, completely isolated. **Tracking:** Tracks per cartridge specifications. **Color:** Special iridescent charcoal gray. **Wiring:** Stereo, 4-pin, 5-wire system with separate ground connection for hum elimination. **Cables furnished:** Line cord, 2 audio cables. **Power requirements:** 100-130 volts 60 cycles AC. **Dimensions:** 17" W x 14¾" D x 5½" above and 3½" below motor board.



ADP-104
$84.51
(with 1c cartridge)

Garrard Type A70 Automatic Turntable With Famous Pusher Platform

• Completely new dynamically balanced tone arm for improved tracking capability & resistance to external shock • New adjustable stylus pressure and tracking force • Full-size heavy-balanced cast "sandwich" turntable • New adjustable bias compensator • New lightweight shell • New ultra-sensitive Delrin® trip assembly • Exclusive pusher platform • Double shielded 4-pole shaded motor

THE CONVENIENCE OF A CHANGER WITH THE PERFORMANCE OF A TURNTABLE. The latest model of the pusher type platform plus fine features like specially balanced arm with needle pivots, foam rubber spring suspension, stylus pressure gauge. Choose a cartridge (p. 19) for 1c more!

ADP-104, 23 lbs., turntable . . . no money down, $9 month **$84.50**
ADP-104, 24 lbs., turntable with choice of 1c offer cartridge, pg. 19 (specify by model no.) . . . no money down, $9 month **$84.51**
ADA-61-1, 1 lb. Garrard LRS3 45 rpm spindle . . . . . **$ 3.80**
ADA-63-3, 4 lbs., walnut-base, 16⁷⁄₁₆" W x 13¹¹⁄₁₆" D x 3" H . . . . . **$ 5.50**

ADP-104 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 & 78 rpm. **Motor:** 4-pole shaded, double shielded. **Tracking:** Will track with "professional" model cartridges. **Color:** Iridescent charcoal gray and chrome. **Wiring:** Stereo, 4-pin/5-wire system w/separate ground connection for hum elimination. **Cables furnished:** Line cord and 2 audio. **Power requirements:** 100-130 volts, 60 cycles AC. **Dimensions:** Requires mounting space 16" W, 13¼" D, 6" above and 2⅞" below top of motor board.



ADP-114
$59.51
(with 1c cartridge)

Garrard Type AT60 Automatic Turntable . . . Fine Value

• New automatic bias compensator to track the lightest & most compliant cartridges accurately & without distortion • New counterweight adjusted, dynamically balanced tone arm • Built-in stylus pressure gauge legible from top • Automatic intermix record operation when desired • Heavy cast, oversize turntable • Lightweight cut-away shell accepts all cartridges including high compliance models

BEST OF ALL WORLDS IN FEATURES AND VALUE . . . professional table features, changer convenience, low cost. Other features: double shielded 4-pole motor, arm safety catch, tubular arm. Choose cartridge (p. 19) for 1c more.

ADP-114, 15 lbs., turntable . . . no money down, $6 month **$59.50**
ADP-114, 16 lbs., turntable and choice of any 1c offer cartridge pg. 19 (specify by model no.) . . . no money down, $6 month **$59.51**
ADA-114-1, 1 lb. . . . Garrard LRS10 45 rpm spindle . . . . . **$ 3.80**
ADA-53W, 3 lbs. . . . walnut finished base . . . 14⅝" W x 12¾" D x 3" H . . . . . **$ 4.95**

ADP-114 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 & 78 rpm. **Motor:** 4-pole shaded, double-shielded. **Tracking:** Will track all cartridges, including high compliance models. **Color:** Special iridescent charcoal gray. **Wiring:** Stereo, 4-pin/5-wire system w/separate ground connection for hum elimination. **Cables furnished:** Line cord, 2 audio cables. **Power requirements:** 100-130 volts, 60 cycles AC. **Dimensions:** Requires mounting space 15⅜" W x 13⅛" D, ⅞" above and 4⅞" below top of motor board.



ADP-124
$44.51
(with 1c cartridge)

Garrard Model 50 . . . Compact And Low Cost

• Plays all four speeds automatically • Automatically mixes records of different sizes & same speed • New oversize turntable and handsome mat cover for better record support • Compact . . . fits "any" cabinet • New counterbalanced tonearm . . . tracks high quality cartridges • DuPont Delrin® "frictionless" trip mechanism

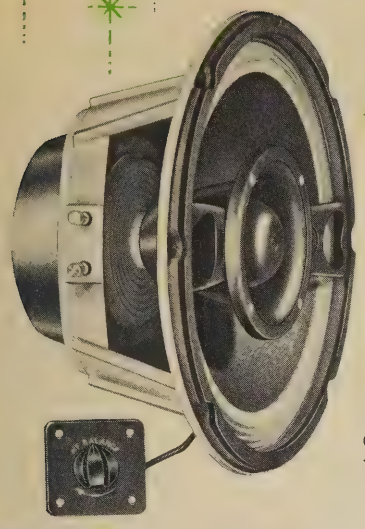
BEST BUY . . . advanced features, modest price . . . sensitive trip mechanism, 4-pole shaded motor, large turntable, cutaway cartridge shell. Choose a cartridge (p. 19) for only 1c more!

ADP-124, changer only, 13 lbs. . . . no money down, $5 month **$44.50**
ADP-124, with choice of any 1c offer cartridge pg. 19 (specify by model no.), 14 lbs. . . . no money down, $5 month **$44.51**
ADA-114-1, Garrard LRS10 45 rpm spindle, 1 lb . . . . . **$ 3.80**
ADA-53W, Garrard matching base (walnut), 3 lbs. . . . 14⅝" W x 12¾" D x 3" H . . . . . **$ 4.95**

ADP-124 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 & 78 rpm. **Motor:** 4-pole, hum shielded. **Tracking:** Tracks per cartridge specifications. **Color:** Gray and silver. **Wiring:** Stereo, plug. **Cables furnished:** Line cord and 2 audio. **Power requirements:** 110-130 volts, 60 cycles AC. **Dimensions:** 14¼" W x 12½" D x 4⅜" above and 2⅞" below top of motor board.

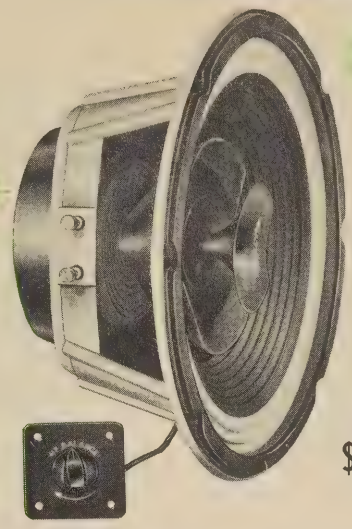
Custom Speakers

HEATHKIT®



AS-183
$49.95





AS-173
$39.95

Top-Of-The-Line In Performance & Value . . . 12″ 2-Way High Compliance Speaker!

SUPERB IN EVERY WAY! Enjoy pure tonal realism . . . 20-15,000 cps, with a high compliance edge damped woofer cone, low crossover frequency and reflexed horn high frequency unit. High efficiency 1¾ lb. ceramic magnet. 1½″ & 1″ voice coils. Polarized speaker terminals. Full 1-year guarantee.

BEAUTIFULLY ATTRACTIVE in 2-tone cinnamon and tan. Cabinet recommendations included. Exceptional value, order now!

Model AS-183, 15 lbs. . . no money dn., $5 mo. **$49.95**
Model AS-183-2, 30 lbs. . . no money dn., $10 mo. . .
Special Pair Price. **$95.00**

AS-183 SPECIFICATIONS — Size: 12″. **Impedance:** 8 ohms. **Power rating:** 30 watts. **Frequency response:** 20-15,000 cps. **Cone resonance:** 25 cps. **Magnet weights:** 1¾ lbs., 4.65 oz.

12″ Deluxe 3-Way High Compliance Speaker . . . Sound Excellence At Any Frequency!

WIDE RANGE. Handles bass with deep richness with its edge-damped woofer cone; mid-range realism from its high frequency cone; distinctively vivid highs from the special Heath designed tweeter. Polarized speaker terminals provide proper phasing.

BIG 25-WATT CAPACITY in program material. Large 1¾ lb. ceramic annular-ring magnet. Built-in crossover networks; separate level control. 2-tone cinnamon and tan styling. Cabinet recommendations and 1-year guarantee included.

Model AS-173, 14 lbs. . . no money dn., $5 mo. **$39.95**
Model AS-173-2, 28 lbs. . . no money dn., $8 mo. . .
Special Pair Price. **$76.00**

AS-173 SPECIFICATIONS — Size: 12″. **Impedance:** 8 ohms. **Power rating:** 25 watts. **Frequency response:** 35-15,000 cps. **Cone resonance:** 40 cps. **Magnet weights:** 1¾ lbs., 2½ oz.



Ⓐ
AS-163
$29.95



Ⓑ
AS-153
$19.95



Ⓒ
AS-133
$14.95



Ⓓ
AS-123
$9.95

Ⓐ12″ Deluxe 3-Way Coaxial Hi-Fi Speaker With High-Efficiency Performance!

QUALITY THROUGHOUT! True coaxial design with 3 radiating segments . . . woofer, tweeter, and special horn tweeter. Smooth sound transition from mechanical and electrical crossover networks. Styled in cinnamon and tan. High frequency level control. 1-year guarantee. Order two, save even more!

Model AS-163, 12 lbs. . . no money dn., $5 mo. **$29.95**
Model AS-163-2, 24 lbs. . . no money dn., $6 mo. . .
Special Pair price. **$57.00**

AS-163 SPECIFICATIONS — Size: 12″. **Impedance:** 8 ohms. **Power rating:** 20 watts. **Frequency response:** 40-15,000 cps. **Cone resonance:** 60 cps. **Magnet weights:** 13 oz., 1 oz. **Voice coil sizes:** 1½″ and 1″.

Ⓑ12″ Two-Way Coaxial Hi-Fi Speaker . . . Exceptional Value!

FULL RANGE SOUND AND REASONABLY PRICED! Separate woofer & tweeter . . . built-in capacitive crossover network. High frequency level control; sturdy die-cast frame for constant alignment of speaker elements. 2-tone color styling. 1-year guarantee.

Model AS-153, 10 lbs. **$19.95**
Model AS-153-2, 20 lbs. . . no money dn., $5 mo. . .
Special Pair Price. **$38.00**

AS-153 SPECIFICATIONS — Size: 12″. **Impedance:** 8 ohms. **Power rating:** 15 watts. **Frequency response:** 50-15,000 cps. **Cone resonance:** 60 cps. **Magnet weights:** 10 oz., 1.47 oz. **Voice coil sizes:** 1″ and 9/16″.

Ⓒ8″ Two-Way Coaxial Hi-Fi Speaker . . . Value-Designed!

COMPACT AND DEPENDABLE! Separate cone woofer and tweeter . . . true coaxial design. Built-in crossover network, high frequency level control. Ideal for small space—*measures only 3⅝″ deep!* Multi-speaker connection instructions; recommended cabinet dimensions; 1 year guarantee!

Model AS-133, 6 lbs. **$14.95**
Model AS-133-2, 12 lbs. . . no money dn., $5 mo. . .
Special Pair Price. **$28.50**

AS-133 SPECIFICATIONS — Size: 8″. **Impedance:** 8 ohms. **Power rating:** 12 watts. **Frequency response:** 50-14,000 cps. **Cone resonance:** 70 cps. **Magnet weights:** 10 oz., 0.68 oz. **Voice coil sizes:** 1″ and 9/16″.

Ⓓ8″ Dual-Cone Hi-Fi Speaker . . . Extra Range, Low Price!

REPRODUCES TRUE QUALITY SOUND! Features husky die-cast frame, polarized binding posts and 10 oz. annular-ring magnet. Perfect for "in-wall" custom installations or shallow cabinets; measures only 3½″ deep! Cabinet recommendations included. 1-year guarantee.

Model AS-123, 5 lbs. **$9.95**
Model AS-123-2, 10 lbs. . . . Special Pair Price. **$19.00**

AS-123 SPECIFICATIONS — Size: 8″. **Impedance:** 8 ohms. **Power rating:** 12 watts **Frequency response:** 50-12,000 cps. **Cone resonance:** 70 cps. **Magnet weight:** 10 oz. **Voice coil size:** 1″.

Quality Heathkit® Speaker Systems...For



AS-15
$144.95

THROUGH HEATH NEW RESEARCH

In The Trend To Larger Speaker Systems . . . The New Heathkit AS-15 Deluxe 3-Way System . . . With 4 Speakers Of Special Design

• 12" high compliance, low resonance woofer • Two special design 2" direct radiator dome-type mid-range speakers • Special design 1" direct radiator dome-type ultra-high frequency tweeter • Response 40 to 20,000 cps • Big voice coils • Heavy ceramic ring magnets • 50-watt program material power capability • High frequency attenuator • Middle frequency attenuator • Preassembled walnut finish enclosure measures 18½" W x 19" D x 32⅜" H • Tube vented, bass reflex design • Styled to match Heath contemporary equipment center, p. 24

NEW DESIGN FOR THE NEW TREND. No more of the inadequate "little box". The new AS-15 is a happy combination of full frequency range response with high power capabilities . . . all in a reasonably sized enclosure. And it uses the latest in speaker designs.

DIRECT RADIATOR MID-RANGE AND HIGH FREQUENCY COMPONENTS. For the first time anywhere, the advantages of direct radiating speakers with their brilliance and clarity are available for mid-range frequencies. The two mid-range units used in this system each have 6¼" frames with 4½" ceramic ring magnets weighing 1 lb. The 2" dome radiators are driven by 1½" voice coils. The ultra high frequency tweeter has a 4¼" frame with a 2¼" ceramic ring magnet weighing 6 oz. Its 1" radiating surface is driven by a 1" voice coil.

HIGH COMPLIANCE WOOFER. The high impact bass notes of this system originate from its 12" high compliance woofer which features a 1½" voice coil and a 1 lb. 11 oz. ceramic ring magnet. Free air resonance is 25 cps.

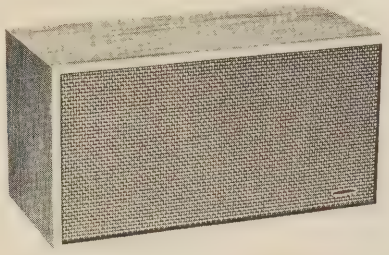
3-WAY CROSSOVER NETWORKS. LC and RC types. Crossover points: 1000 cps and 10,000 cps. Two attenuators: high frequency and mid-frequency, range from full to cutoff.

POWERFUL. This system easily handles 50 watts of program material yet it can be driven by as little as 5 watts.

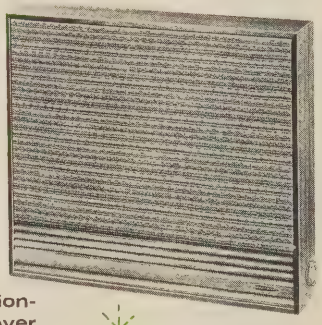
HANDSOME FLOOR MODEL CABINET. Styled in rich walnut finish to match Heath contemporary equipment cabinet (p. 24). Factory assembled of ¾" solids and veneers. For the best value in the new design, order the AS-15.

Kit AS-15, 74 lbs.... No money dn., $14 mo.....**$144.95**

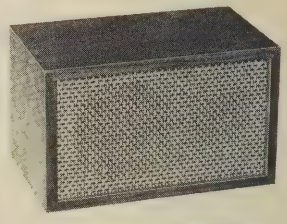
AS-15 SPECIFICATION—Recommended Amplifiers: AR-13A, pg. 10; AR-14, pg. 11; AA-21D, pg. 12; AA-22, pg. 13; AA-100, pg. 15; AA-151, pg. 16; AA-32, pg. 17; AA-13 & AA-23, pg. 18; AA-14, pg. 14. **Frequency Response:** 40 to 20 kc. **Crossover Frequencies:** Low 1000 cps to high frequency 10 kc. **Power Rating:** 50 watts of program material. **Nominal Impedance:** 8 ohms. **Speakers:** (1) 12" Jensen high compliance, low resonance, low frequency; (2) 2" direct radiator dome-type mid-frequency; (1) 1" Jensen direct radiator dome-type ultra high frequency speaker. **Crossover Network: Three Channel:** Low frequency, low pass LC type; Mid-frequency, bandpass LC type; High frequency, high pass RC type filter. **Cabinet:** Walnut finished, tube vented type. **Dimensions:** Overall; 18½" W x 19" D x 32⅜" H.



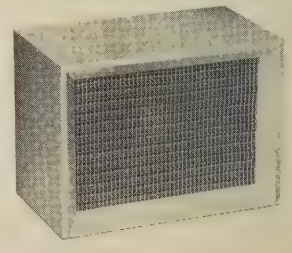
Ⓐ
AS-51U
$39.95



Ⓑ
AS-193U
$22.50



Ⓒ
AS-81U
$17.50



Ⓓ
AS-41U
$10.95

Ⓐ Thousands Have Bought This Fine 2-Way Hi-Fi Speaker System

• Specially designed speakers—8" woofer and compression-type tweeter with flared exponential horn • Built-in crossover • Tweeter level control • Preassembled unfinished or walnut finish cabinets

Everything you need including the right price! Wide frequency response, high power handling capability, handsome styling, quality speakers, easy assembly and a price as low as $39.95. Compare its specifications.

Kit AS-51U, unfinished, 27 lbs.... No money dn., $5 mo.....**$39.95**

Kit AS-51W, Walnut, 27 lbs.... No money dn., $5 mo.....**$46.95**

AS-51 SPECIFICATIONS—Recommended amplifiers: AR-14, pg. 11; AA-14, pg. 14; AA-32, pg. 17; AA-151, pg. 16; AA-21D, pg. 12; AA-22, pg. 13; AA-100, pg. 15; AA-13 & AA-23, pg. 18. **Frequency response:** 50 to 12,000 cps. **Crossover frequency:** 1600 cps. **Power rating:** Program Material—25 watts. Single Frequency—15 watts. **Nominal impedance:** 16 ohms. **Speakers:** Low Frequency—8" Jensen (special design) 6.8 oz. Alnico 5; High Frequency—Jensen compression driver with exponential horn (special design), 4.7 oz. Alnico 5. L-PAD—level control for high frequency driver. **Dimensions:** 11½" H x 23" W x 11¾" D.

Ⓑ 3 Speakers In A Flat Miniature Wall Mount Cabinet!

• 5¾" woofer and two 3" tweeters • Side mounted level control • Easy to assemble • Compact—ideal for wall, shelf or table • Preassembled unfinished or walnut finish cabinets

Good performance in a fit-anywhere size. Wide range response and compact cabinet makes it ideal for that second stereo system, extension speaker use, rec rooms, etc. Easy to assemble, just mount the speakers.

Kit AS-193U, unfinished, 12 lbs.....**$22.50**

Kit AS-193W, walnut, 12 lbs. . . . no money dn., $5 mo.....**$24.95**

AS-193 SPECIFICATIONS—Recommended amplifiers: AA-14, pg. 14; AA-32, pg. 17; AA-151, pg. 16; AA-13, pg. 18. **Impedance:** May be used with amplifier having 4, 8, or 16 ohm output. **Frequency range:** 65-14,000 cps. **Crossover frequency:** 4,000 cps. **Speaker power rating:** 6 watts. Higher rated amplifiers, adjusted for reasonable listening levels, may be used. Adequate room sound with 1 watt to speaker. **Nom. woofer size:** 5½" cone type. **Dimensions:** 12⅞" H x 15⅜" W x 2¾" D.

Ⓒ Miniature Hi-Fi 2-Speaker System

• 6" high compliance, mass-loaded woofer • 3" closed back tweeter • Fast, easy assembly • Preassembled unfinished or walnut finish cabinets

Kit AS-81U, unfinished, 10 lbs.....**$17.50**

Kit AS-81W, walnut, 10 lbs.....**$19.95**

AS-81 SPECIFICATIONS—Recommended amplifiers: AA-14, pg. 14; AA-32, pg. 17; AA-13, pg. 18; AA-151, pg. 16. **Frequency response:** From 70 to 14,000 cps. **Crossover frequency:** 4000 cps. **Recommended amplifier power:** 6 watts. **Nominal impedance:** 8 ohms. **Cabinet:** Type: infinite. **Dimensions:** 10¾" W x 6½" H x 6⅜" D; material, ½" veneer plywood. **Speakers:** Tweeter, 3" cone type, 8 ohms, .53 oz. Alnico 5 magnet; Woofer, 5½" cone type, 8 ohms, 10 oz. Syntox No. 6 magnet. **Crossover:** Capacitor type.

Ⓓ Lowest Cost Hi-Fi Speaker System

• 6" x 9" extended range dual-cone speaker • Easy assembly • Preassembled unfinished or walnut finish cabinets

Kit AS-41U, unfinished, 8 lbs.....**$10.95**

Kit AS-41W, walnut, 8 lbs.....**$12.95**

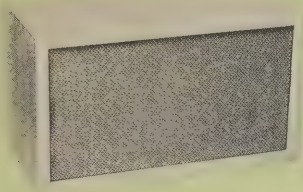
AS-41 SPECIFICATIONS—Recommended amplifiers: AA-14, pg. 14; AA-32, pg. 17; AA-151, pg. 16; AA-13, pg. 18. **Frequency response:** 70 to 16,000 cps. **Impedance:** 8 ohms. **Capacity:** 12 watts. **Enclosure:** Rear vented box. **Speaker:** 6" x 9" extended range dual cone, 6.8 oz. Alnico 5 magnet. **Cabinet:** Factory assembled, furniture-grade ½" plywood. **Dimensions:** 8" H x 11" W x 6½" D.

Better Sound At Lower Cost!

HEATHKIT®

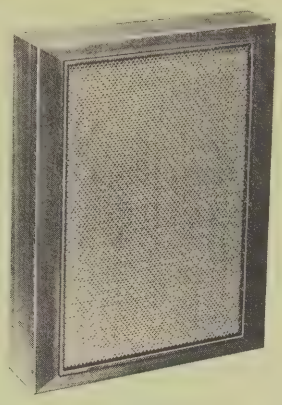


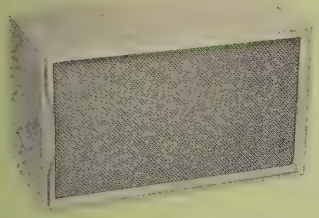
Ⓑ AS-2AU
$89.95



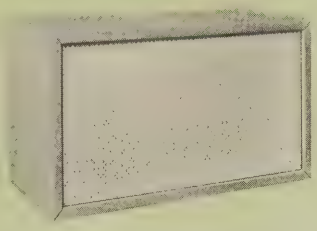


Ⓓ AS-22U
$49.95





Ⓐ AS-10U
$59.95



Ⓒ AS-2U
$69.95

Ⓐ Low Cost Acoustic Suspension Speaker System

• 10" acoustic suspension woofer, two 3½" cone-type tweeters • Takes only 10 watts to drive, yet handles up to 40 watts • Pre-assembled cabinets, use vertically or horizontally

Kit AS-10U, unfinished, 43 lbs. . . . no money down, $6 mo. **$59.95**

Kit AS-10W, walnut, 42 lbs. . . . no money down, $7 mo. **$64.95**

AS-10 SPECIFICATIONS—Recommended amplifiers: AA-21D, pg. 12; AA-22, pg. 13; AA-100, pg. 15; AA-151, pg. 16; AA-13 & AA-23, pg. 18; AR-13A, pg. 10. **Frequency response:** 30 to 15,000 cps. **Impedance:** 16 ohms. **Recommended amplifier power:** 10 to 40 watts. **Enclosure:** Infinite baffle, sealed. **Speakers:** Woofer, 10" Acoustic Suspension, Syntox 6 ceramic magnet; Tweeter, two 3½" cone units in dispersed array, 1.47 oz. Alnico 5 magnets. **Crossover:** L-C network, 2250 cps. **Control:** High frequency level. **Dispersion:** 90° horizontal. **Cabinet:** Factory assembled ¾" furniture-grade plywood. **Dimensions:** 13½" H x 24" W x 11½" D.

Ⓑ Best Value—With Super Tweeter—All Acoustic Research Components

• Added super tweeter for extended high frequency response • Built-in crossover networks • High frequency level controls • 10" suspension woofer, two 5" crossfired tweeters, plus 1⅜" dome-type super-tweeter—all genuine Acoustic Research, Inc. manufactured units • Preassembled cabinets

Kit AS-2AU, (unfinished, white hardboard), 51 lbs. . . .
no money down, $9 mo. **$89.95**

Kit AS-2AW (finished walnut), 51 lbs. . . .
no money down, $10 mo. **$96.50**

AS-2A SPECIFICATIONS—Recommended amplifiers: AA-21D, pg.12; AA-100, pg. 15; AA-22, pg. 13; AA-23, pg. 18; AR-13A, pg. 10. **Frequency response:** ±5 db, 40 to 20,000 cps. **Impedance:** 8 ohms. **Recommended amplifier power:** 20 watts minimum. **Enclosure:** Infinite baffle, sealed. **Speakers:** Woofer, 10" Acoustic Suspension, 1.1 lb. Alnico 5 magnet; Midrange, two 5" cone units, in dispersed array, 2.15 oz. Alnico 5 magnets; Super-tweeter, 1⅜" dome-type construction. **Crossover:** L-C network, 2000 & 7500 cps. **Controls:** Individual levels for tweeter and mid-range speakers. **Dispersion:** 90° horizontal. **Cabinet:** Factory assembled ¾" furniture-grade plywood. **Dimensions:** 13½" H x 24" W x 11⅜" D.

Ⓒ Acoustic Suspension Speaker System With Acoustic Research, Inc. Components

• 10" acoustic suspension woofer, two 5" cross-fired tweeters manufactured by Acoustic Research, Inc. • Wide-range sound with compact speaker versatility • Easy to build with pre-assembled cabinet

Kit AS-2U, unfinished, 45 lbs. . . no money down, $7 mo. **$69.95**

AS-2U SPECIFICATIONS—Recommended amplifiers: AA-21D, pg. 12; AA-100, pg. 15; AA-22, pg. 13; AA-23, pg. 18; AR-13A, pg. 10. **Frequency response:** 40 to 15,000 cps. **Crossover frequency:** 2,000 cps. **Recommended amplifier power:** 20 to 40 watts RMS. **Nominal impedance:** 8 ohms. **Tweeter:** Two 5" cone units, specially treated and equalized, in dispersed array, 2.15 oz. Alnico 5 magnet. **Woofer:** 10" Acoustic Suspension, 1.1 lb. Alnico 5 magnet. Resonant Frequency (mounted) 58 cps. **Crossover:** L-C network. **Horizontal dispersion:** 90°. **Size:** 24" W x 13½" H x 11½" D.

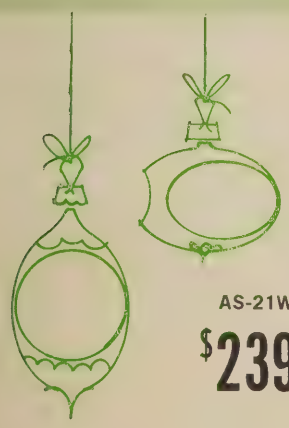
Ⓓ "Profile"—The 3-Way Speaker System That Fits Anywhere

• 3 specially-designed speakers—10", 6", 3½" • 5" slim . . . ideal for floor, shelf, or wall installation • Factory assembled, tube-tuned bass reflex cabinet, available unfinished or walnut finish

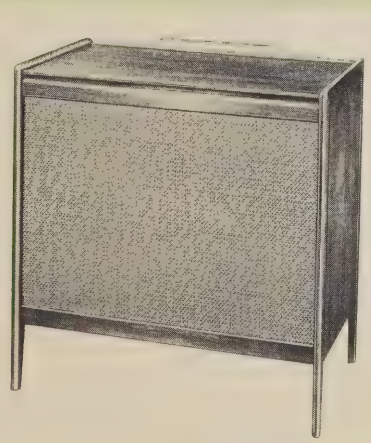
Kit AS-22U, unfinished, 34 lbs. . . . no money dn., $5 mo. **$49.95**

Kit AS-22W, walnut, 35 lbs. . . . no money dn., $6 mo. **$54.95**

AS-22 SPECIFICATIONS—Recommended amplifiers: AR-13A, pg. 10; AA-22, pg. 13; AA-151, pg. 16; AA-21D, pg. 12; AA-100, pg. 15; AA-23 & AA-13, pg. 18. **Frequency response:** 55 to 12,500 cps. **Crossover frequency:** 2250 cps. **Recommended amplifier power:** 10 to 25 watts. **Nominal impedance:** 8 ohms. **Woofer:** 10" special inverted design. 1.1 lb. Alnico V magnet. **Mid-range:** 6" closed back, 2.15 oz. Alnico V magnet. **Tweeter:** 3½" closed back, 2.15 oz. Alnico V magnet. **Cabinet:** Bass reflex, tube-tuned, factory assembled of ¾" furniture grade plywood. **Dimensions:** 19½" W x 25½" H x 5" D.



AS-21W
$239.95



"Legato Compact" . . . The Greatest Value In Large Speaker Systems

• Speakers cover 30-22,000 cps • 800 cps crossover network – completely assembled • Can be driven by as little as 3 watts, handles up to 30 watts • Preassembled walnut-finish cabinet, ready for simple speaker installation • Styling matches AE-20 hi-fi equipment cabinet, pg. 24

MASTERPIECE: Known by audiophiles the world over for its acoustical excellence—recognized by engineers for achievement in sound technology. A "total" system from components to enclosure—designed to be the finest. Extraordinary performance at the cost of ordinary speakers.

Kit AS-21W, 142 lbs. . . . no money dn., $22 mo. **$239.95**

AS-21 SPECIFICATIONS—Recommended amplifiers: AR-13A, pg. 10; AA-21D, pg. 12; AA-22, pg. 13; AA-100, pg. 15. **Frequency response:** 30 to 22,000 cps. **Impedance:** 16 ohms. **Capacity:** 30 watts. **Enclosure:** Modified Infinite baffle. **Speakers:** Low frequency, two Altec Lansing 12" high compliance woofers, 1½ lb. magnets; High frequency, one Altec Lansing 800 cycle exponential horn and driver, 53 lb. magnet. **Crossover:** 800 cycle constant K type, assembled. **Control:** high frequency shelving. **Dispersion:** 90° horizontal. **Cabinet:** Factory assembled furniture-grade ¾" plywood. **Dimensions:** 32" W x 19" D x 32½" H.

ADP-92
$23.92



Telex ST-11 Stereo Headset For Private Listening

• Extended response • Sensitive • Comfortable

Model ADP-92, 2 lbs. **$23.92**

ADP-92 SPECIFICATIONS — Driver element: Dynamic. **Sensitivity:** better than 95 db. **Frequency response:** 16 to 15,000 cps. **Impedance:** 8 ohms for use with 3 to 16 ohm sources. **Power input:** 15 milliwatts, 1 watt maximum. **Cord:** 4-wire 12 ft. long with spade terminals. **Color:** Tan and brown.

AC-13
$9.95

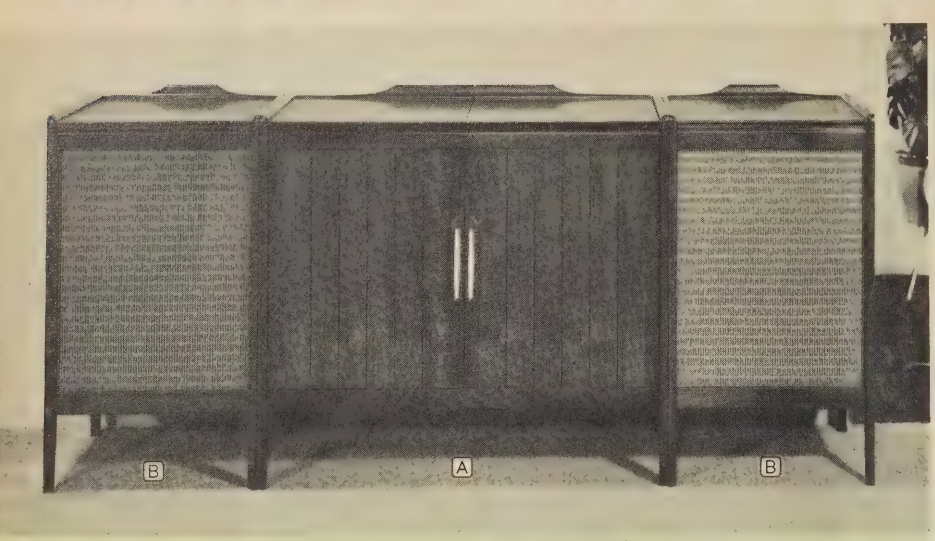


Stereo Headphone Control Box

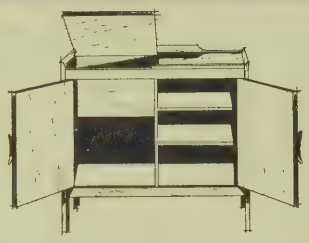
• Convenient switching from speaker to headphones • Handles any amplifier power • Matches any impedance headset • Accepts 2 headsets • Adjustable level for each ear • Includes 15' cable • Compact—3" W x 6" D x 3¼" H.

Kit AC-13, 3 lbs. **$9.95**

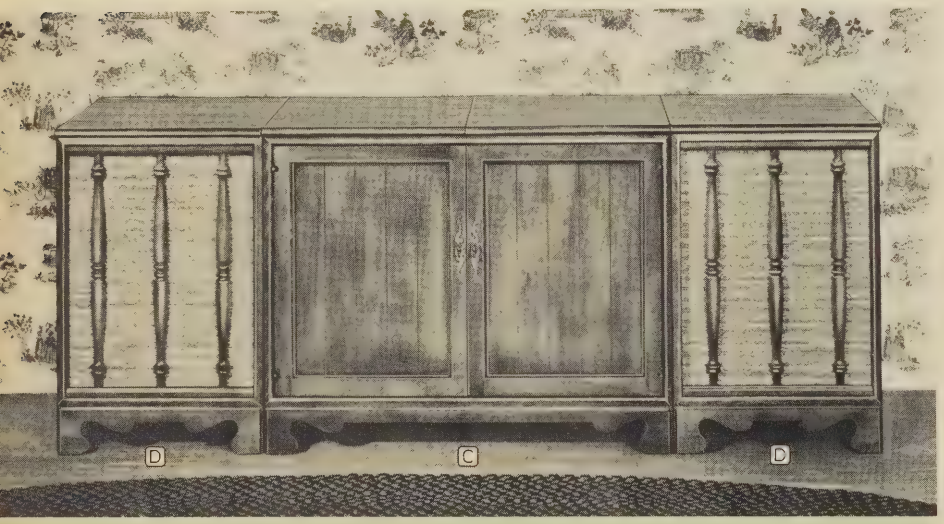
Exclusive Heathkit® Stereo/Hi-Fi Furniture!



• Custom designed for Heathkit Stereo/Hi-Fi components . . . accommodates most makes • Beautiful modern walnut finish • Factory assembled, ready for component installation • Speaker cabinet can be matched to any 12" or 15" speaker for best tone



AE-20 EQUIPMENT ACCOMMODATIONS AND SIZES—Cabinet, overall: 36'' W x 32⅜'' H x 19'' D. **Changer compartment:** 17'' W x 15¾'' D, mounting board is uncut and can be adjusted in height to accept all record changers sold by Heath; lid has adjustable friction-loaded support. **Record-tape recorder compartment:** 14½'' H x 17'' W x 17'' D, for record storage; space is convertible with accessory sliding drawers below to accommodate tape recorder. **Shelf compartment:** (2) each 17'' W x 6'' H x 17'' D (inside shelf 14'' deep); either shelf accepts any Heath Stereo or Mono tuner, Stereo or Mono preamplifier or stereo or mono combination amplifier. **Power amplifier compartments:** 8¾'' H x 17'' W x 15⅛'' D inside, accepts any Heathkit stereo or mono amplifier.



• Beautifully finished in stunning salem-maple • Exclusively styled, a special Heathkit design • Custom-designed for Heathkit stereo components • Holds most hi-fi/stereo components • Factory assembled, ready to use



AE-13S EQUIPMENT ACCOMMODATIONS AND SIZES—Cabinet, overall: 28'' H x 36'' W x 18¾'' D. **Changer compartment:** 17'' W x 16'' D x 5¾'' H. Mounting board is uncut and can be adjusted in height to accept all record changers sold by Heath; lid has adjustable friction-loaded support. **Record-tape recorder compartment:** 14¾'' H x 17'' W x 17¼'' D for record storage; space is convertible with accessory sliding drawers to accommodate tape recorder. **Shelf compartments:** Top shelf, 6¾'' H x 17'' W x 15⅞'' D. Middle shelf, 6'' H x 17'' W x 15⅞'' D. Bottom shelf, 9'' H x 17'' W x 17'' D. Shelves accept any Heath stereo or mono tuner, stereo or mono preamplifier, or stereo or mono combination amplifier.

Ⓐ Sleek, Modern Styling . . . Master Craftsmanship . . . Deluxe Heathkit Stereo/Hi-Fi Cabinetry!

IF YOU LIKE THE CLEAN, FLOWING LINES OF MODERN STYLING, then you'll love the AE-20. This skillfully crafted Equipment Center is a masterpiece of luxurious furniture that you'll be proud to have in your home. Solidly constructed of fine woods, the AE-20 is accented with clean, eye-arresting relief touches. Slim, curved brass handles on each door highlight the "sculptured" effect. Comes completely factory assembled, ready to accommodate your hi-fi/stereo components. Matching uncut tape recorder drawer (7" H x 16" W x 16½" D. wood ¾" thick) optional. Luxurious hand-rubbed walnut finish.

Model AE-20W (walnut), 81 lbs....no money dn., $10 mo.....**$99.50**

Model AEA-12-4, walnut uncut recorder drawer, 16 lbs.....**$19.95**

Ⓑ Matching Speaker Cabinet . . . Use With Any 12" Or 15" Speaker

With the addition of the matching AE-40 speaker cabinets, you have a complete music system both in beautifully styled furniture and total stereo performance. Handles either 12 or 15 inch speakers. Also has a 3⅝" x 10³⁄₁₆" slot for a horn tweeter. Factory assembled. Measures 18½" W x 19" D x 32⅜" H.

Model AE-40W (walnut), 57 lbs....no money dn., $5 mo.....each **$44.95**

Ⓒ Heathkit Early American Stereo/Hi-Fi Center . . . A Gift You'll Cherish For Years To Come!

EARLY AMERICAN RICHNESS WITH MODERN COMPONENT LAYOUT! With this richly crafted Heathkit Stereo/Hi-Fi furniture, you enjoy all the beauty and styling of Early Americana with the right flair of the modern in its low, compact size and practical component compartment layout. Adds a touch of luxury and good taste to any room!

EXCLUSIVE HEATHKIT STYLING . . . SPECIALLY-SELECTED WOODS! This superb furniture is sturdily constructed with a combination of specially-selected maple veneers and solids. The handsomely-sculptured "Lancaster Antique" solid-brass handles add pleasing eye-catching accents. Beautifully styled in an exclusive Heathkit motif!

COMPLETELY FACTORY ASSEMBLED AND FINISHED, the AE-13S is specially designed to accommodate Heathkit components, *and* will accept most any type or model of Stereo/Hi-Fi equipment. Make your home entertainment center a thing of beauty by ordering this luxurious furniture now!

Model AE-13S, 76 lbs. no money dn., $11 mo.....**$115.00**

Model AEA-13-1, uncut recorder drawer, 7" H x 16" W x 16½" D, wood ¾" thick, 16 lbs. **$20.00**

Ⓓ You Can Match This Cabinet To Any 12" Or 15" Speaker For Best Tone!

MATCHES THE AE-13S EQUIPMENT CENTER IN STYLING, QUALITY AND FINISH. Handles 12 or 15 inch speakers, and has a 3⅜" x 10³⁄₁₆" slot for horn tweeter. Tube vented design matches cabinet to speaker. Completely factory assembled and finished. Measures 18¼" W x 18¾" D x 28" H. Use of attractive spindle grille optional. Order a matching pair now.

Model AE-23S, 55 lbs., no money dn., $6 mo.,.....each **$55.00**

HEATH COMPANY

Benton Harbor, Michigan 49023

ORDER FORM

PHONE • 616-983-3961 **FAX**—BENTON HARBOR, MICHIGAN **TWX**—616-983-3897

1 PLEASE PRINT OR WRITE NAME AND ADDRESS PLAINLY

NAME

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CITY STATE ZIP

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2 SHIP TO ANOTHER ADDRESS? Give directions here.

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ADDRESS

CITY STATE ZIP

3 CHECK HOW YOU WANT ORDER SHIPPED ▶ Parcel Post ☐ *Motor Freight ☐ (100 lb. min. chg.) Express ☐

ON EXPRESS ORDERS if station is in different town than your post office address, show name of town where shipment should be sent:

7 TOWN STATE

4 IF YOU HAVE MOVED SINCE YOUR LAST ORDER— write your old address here:

STREET ADDRESS

CITY STATE ZIP

5 TO HELP US SERVE YOU BETTER, will you please answer the following questions?

What type of Heathkit interests you most? ☐ Hi Fi ☐ Instruments ☐ Amateur Radio ☐ Marine ☐ Other

What new Heathkits would you like us to make?

6 IS THIS YOUR FIRST ORDER? ☐ YES ☐ NO

SHD.	B. O.	QUAN.	MODEL	KIT DESCRIPTION	WT.	PRICE EA.	TOTAL
PLEASE DO NOT WRITE IN THIS SPACE	PLEASE DO NOT WRITE IN THIS SPACE						

IMPORTANT. Please use a separate sheet for all correspondence, to assure a prompt reply to your letter.

All prices quoted are net F.O.B. Benton Harbor, Michigan, and apply to the United States, F.P.O. and A.P.O. areas.

All prices and specifications subject to change without notice.

Orders F.P.O. and A.P.O. must include sufficient postage.

C.O.D. ORDERS must be accompanied by 20% deposit. Delivering carrier will require cash or certified check in payment of C.O.D. amount.

PARCEL POST ORDERS should include postage for weight shown. Transportation costs for all express or motor freight shipments will be collected at the time of delivery.

SEE REVERSE SIDE for time pay details on orders of $25 or more.

***MOTOR FREIGHT CHARGES** will not be less than $4.91, as you pay for 100 lbs. Since rates vary with localities, consult your local truck line.

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8 TYPE OF ORDER (CHECK ONE)

☐ **CASH** Please use registered mail for currency.

☐ **C.O.D.** 20% deposit required.

☐ **TIME PAY.** See reverse side for time pay details on orders of $25 or more.

☐ **ADD ON** If previous time pay customer, give current account number

9 MERCHANDISE ORDERED

FROM CAT. NO.

10

A. Allowance if offered	
B. TOTAL AMOUNT OF ORDER.	
C. Add sales tax on all deliveries in the State of Michigan.	
D. Amount for parcel post. Do not remit for express charges.	
E. Amount due from previous order Inv. #	
F. TOTAL AMOUNT	
G. TIME PAY DOWN PAYMENT	
H. 20% C.O.D. deposit	
I. UNPAID BALANCE (total order less down payment or C.O.D. deposit)	

800/56

Open Your Heath Account—Liberal Terms

NOTICE TO BUYER:
Mail Order/Retail Installment Contract

Do not sign this contract before you read it. Under the law you have the following rights among others:

A. To pay off in advance the full amount due.

B. Under certain conditions to redeem the property, if repossessed for a default.

Time Payments are available to anyone in the U.S. or FPO and APO areas. Residents of Puerto Rico and other U. S. possessions, write for details!

LIBERAL TERMS! No money down on orders up to $300 (Down payments reduce monthly payments and carrying charges). 10% down and up to 18 months to pay on orders over $300. Write for details on order over $500.

HERE'S ALL YOU DO . . .

1. Fill out order blank in the catalog.
2. Sign your name in the Time Payment Agreement below.
3. Fill in the Credit Statement and the monthly payment (see chart).
4. Send the above to the Heath Company, Benton Harbor, Michigan . . . we'll take care of the details.

"ADD ON" Purchases—Once your credit is established and you have made at least three payments, you can "add-on" purchases of $25.00 or more with no down payment. List the items you want on the reverse side, check (8) the "add on" box and give your account number. Be sure to sign the Time Payment Agreement, and send to us with your original Payment Book.

EASY PAYMENT CHART

Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up to 12 Monthly Payments*
Up to $20.00	$ 2.00	$ 5.00	$250.01-260	$26.00	$24.00
$ 20.01-30	3.00	5.00	260.01-270	27.00	25.00
30.01-40	4.00	5.00	270.01-280	28.00	26.00
40.01-50	5.00	5.00	280.01-290	29.00	27.00
50.01-60	6.00	6.00	290.01-300	30.00	28.00
60.01-70	7.00	7.00	300.01-310	31.00	29.00
70.01-80	8.00	8.00	310.01-320	32.00	30.00
80.01-90	9.00	9.00	320.01-330	33.00	31.00
90.01-100	10.00	10.00	330.01-340	34.00	32.00
100.01-110	11.00	11.00	340.01-350	35.00	33.00
110.01-120	12.00	11.00	350.01-360	36.00	34.00
120.01-130	13.00	12.00	360.01-370	37.00	35.00
130.01-140	14.00	13.00	370.01-380	38.00	36.00
140.01-150	15.00	14.00	380.01-390	39.00	37.00
150.01-160	16.00	15.00	390.01-400	40.00	38.00
160.01-170	17.00	16.00	400.01-410	41.00	39.00
170.01-180	18.00	17.00	410.01-420	42.00	40.00
180.01-190	19.00	18.00	420.01-430	43.00	41.00
190.01-200	20.00	19.00	430.01-440	44.00	42.00
200.01-210	21.00	20.00	440.01-450	45.00	43.00
210.01-220	22.00	21.00	450.01-460	46.00	44.00
220.01-230	23.00	22.00	460.01-470	47.00	45.00
230.01-240	24.00	22.00	470.01-480	48.00	46.00
240.01-250	25.00	23.00	480.01-490	49.00	47.00
			490.01-500	50.00	48.00

*All monthly payments are for the amount shown; last payment is for the odd amount remaining due.

Up to 18 Months	
Carrying Charge	Monthly Payment*
$46.50	$20.00
48.00	21.00
49.50	22.00
51.00	22.00
52.50	23.00
54.00	23.00
55.50	24.00
57.00	25.00
58.50	25.00
60.00	26.00
61.50	27.00
63.00	28.00
64.50	29.00
66.00	29.00
67.50	30.00
69.00	30.00
70.50	31.00
72.00	31.00
73.50	32.00
75.00	32.00

Check if balance is over $300 and 18 mos. desired ☐

TIME PAYMENT AGREEMENT

NOTE: Time payment agreement cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of $_____ on the Easy Payment cost of the equipment on the reverse side. I will pay $_____ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.

Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or repossess the equipment. If you shall repossess, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

If this order is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. This contract is to be governed by the laws of the State of Michigan.

Enter Date_____ Sign Here_____

CREDIT STATEMENT

(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

PRINT FULL NAME_____ Age_____ Military Serial No. (if serviceman)_____
First Middle Last

WIFE'S NAME_____ Names of Children and ages_____

Residence_____ City_____ State_____ How Long_____

☐ Own or Buying ☐ Rent ☐ Live with Parents No. of Rooms_____ Paid Monthly $_____ Phone No._____

Landlords If Owned Name Mtg. Held By_____ Street_____ City_____ State_____

Previous Address_____ City_____ State_____ How Long_____

Previous Landlord_____ Address_____

Employed by_____ Street_____ City_____ State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Previous Employer_____ Street_____ City_____ State_____ How Long_____

Wife's Employer_____ Street_____ City & State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Other Income—Give Details_____ Total Family Income $_____

Your Bank_____ Address_____ Type of Account_____

CREDIT REFERENCE (Give 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

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(Do not list those with whom you are living)

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Everyone interested in electronics will want the new Heathkit 1966 Catalog . . . it's the world's biggest kit catalog!

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City_____ State_____ Zip_____

NAME

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HEATH COMPANY

BENTON HARBOR,

MICHIGAN 49023

HEATH COMPANY

Benton Harbor, Michigan 49023

ORDER FORM

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1 PLEASE PRINT OR WRITE NAME AND ADDRESS PLAINLY

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2 SHIP TO ANOTHER ADDRESS? Give directions here.

NAME

ADDRESS

CITY STATE ZIP

3 CHECK HOW YOU WANT ORDER SHIPPED ▶ Parcel Post ☐ *Motor Freight ☐ (100 lb. min. chg.) Express ☐

ON EXPRESS ORDERS if station is in different town than your post office address, show name of town where shipment should be sent:

7 TOWN STATE

4 IF YOU HAVE MOVED SINCE YOUR LAST ORDER— write your old address here:

STREET ADDRESS

CITY STATE ZIP

5 TO HELP US SERVE YOU BETTER, will you please answer the following questions?

What type of Heathkit interests you most? ☐ Hi Fi ☐ Instruments ☐ Amateur Radio ☐ Marine ☐ Other

What new Heathkits would you like us to make?

6 IS THIS YOUR FIRST ORDER? ☐ YES ☐ NO

SHD.	B. O.	QUAN.	MODEL	KIT DESCRIPTION	WT.	PRICE EA.	TOTAL

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PLEASE DO NOT WRITE IN THIS SPACE

IMPORTANT. Please use a separate sheet for all correspondence, to assure a prompt reply to your letter.

All prices quoted are net F.O.B. Benton Harbor, Michigan, and apply to the United States, F.P.O. and A.P.O. areas.

All prices and specifications subject to change without notice.

Orders F.P.O. and A.P.O. must include sufficient postage.

C.O.D. ORDERS must be accompanied by 20% deposit. Delivering carrier will require cash or certified check in payment of C.O.D. amount.

PARCEL POST ORDERS should include postage for weight shown. Transportation costs for all express or motor freight shipments will be collected at the time of delivery.

SEE REVERSE SIDE for time pay details on orders of $25 or more.

***MOTOR FREIGHT CHARGES** will not be less than $4.91, as you pay for 100 lbs. Since rates vary with localities, consult your local truck line.

PLEASE DO NOT WRITE IN THIS SPACE

8 TYPE OF ORDER (CHECK ONE)

☐ **CASH** Please use registered mail for currency.

☐ **C.O.D.** 20% deposit required.

☐ **TIME PAY.** See reverse side for time pay details on orders of $25 or more.

☐ **ADD ON** If previous time pay customer, give current account number

9 MERCHANDISE ORDERED FROM CAT. NO.

10

A. Allowance if offered	
B. TOTAL AMOUNT OF ORDER.	
C. Add sales tax on all deliveries in the State of Michigan.	
D. Amount for parcel post. Do not remit for express charges.	
E. Amount due from previous order Inv. #	
F. TOTAL AMOUNT	
G. TIME PAY DOWN PAYMENT	
H. 20% C.O.D. deposit	
I. UNPAID BALANCE (total order less down payment or C.O.D. deposit)	

800/56

Open Your Heath Account—Liberal Terms

NOTICE TO BUYER:
Mail Order/Retail Installment Contract

Do not sign this contract before you read it. Under the law you have the following rights among others:

A. To pay off in advance the full amount due.

B. Under certain conditions to redeem the property, if repossessed for a default.

Time Payments are available to anyone in the U.S. or FPO and APO areas. Residents of Puerto Rico and other U. S. possessions, write for details!

LIBERAL TERMS! No money down on orders up to $300 (Down payments reduce monthly payments and carrying charges). 10% down and up to 18 months to pay on orders over $300. Write for details on order over $500.

HERE'S ALL YOU DO . . .

1. Fill out order blank in the catalog.
2. Sign your name in the Time Payment Agreement below.
3. Fill in the Credit Statement and the monthly payment (see chart).
4. Send the above to the Heath Company, Benton Harbor, Michigan . . . we'll take care of the details.

"ADD ON" Purchases—Once your credit is established and you have made at least three payments, you can "add-on" purchases of $25.00 or more with no down payment. List the items you want on the reverse side, check (8) the "add on" box and give your account number. Be sure to sign the Time Payment Agreement, and send to us with your original Payment Book.

EASY PAYMENT CHART

Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up to 12 Monthly Payments*	*All monthly payments are for the amount shown; last payment is for the odd amount remaining due. Up to 18 Months	
						Carrying Charge	Monthly Payment*
Up to $20.00	$ 2.00	$ 5.00	$250.01-260	$26.00	$24.00		
$ 20.01-30	3.00	5.00	260.01-270	27.00	25.00		
30.01-40	4.00	5.00	270.01-280	28.00	26.00		
40.01-50	5.00	5.00	280.01-290	29.00	27.00		
50.01-60	6.00	6.00	290.01-300	30.00	28.00		
60.01-70	7.00	7.00	300.01-310	31.00	29.00	$46.50	$20.00
70.01-80	8.00	8.00	310.01-320	32.00	30.00	48.00	21.00
80.01-90	9.00	9.00	320.01-330	33.00	31.00	49.50	22.00
90.01-100	10.00	10.00	330.01-340	34.00	32.00	51.00	22.00
100.01-110	11.00	11.00	340.01-350	35.00	33.00	52.50	23.00
110.01-120	12.00	11.00	350.01-360	36.00	34.00	54.00	23.00
120.01-130	13.00	12.00	360.01-370	37.00	35.00	55.50	24.00
130.01-140	14.00	13.00	370.01-380	38.00	36.00	57.00	25.00
140.01-150	15.00	14.00	380.01-390	39.00	37.00	58.50	25.00
150.01-160	16.00	15.00	390.01-400	40.00	38.00	60.00	26.00
160.01-170	17.00	16.00	400.01-410	41.00	39.00	61.50	27.00
170.01-180	18.00	17.00	410.01-420	42.00	40.00	63.00	28.00
180.01-190	19.00	18.00	420.01-430	43.00	41.00	64.50	29.00
190.01-200	20.00	19.00	430.01-440	44.00	42.00	66.00	29.00
200.01-210	21.00	20.00	440.01-450	45.00	43.00	67.50	30.00
210.01-220	22.00	21.00	450.01-460	46.00	44.00	69.00	30.00
220.01-230	23.00	22.00	460.01-470	47.00	45.00	70.50	31.00
230.01-240	24.00	22.00	470.01-480	48.00	46.00	72.00	31.00
240.01-250	25.00	23.00	480.01-490	49.00	47.00	73.50	32.00
			490.01-500	50.00	48.00	75.00	32.00

Check if balance is over $300 and 18 mos. desired ☐

TIME PAYMENT AGREEMENT

NOTE: Time payment agreement cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of $_____ on the Easy Payment cost of the equipment on the reverse side. I will pay $_____ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.

Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or repossess the equipment. If you shall repossess, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

If this order is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. This contract is to be governed by the laws of the State of Michigan.

Enter Date_____ Sign Here_____

CREDIT STATEMENT

(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

PRINT
FULL NAME_____ Age_____ Military Serial No. (if serviceman)_____
First Middle Last

WIFE'S NAME_____ Names of Children and ages_____

Residence_____ City_____ State_____ How Long_____

☐ Own or Buying ☐ Rent ☐ Live with Parents No. of Rooms_____ Paid Monthly $_____ Phone No._____

Landlords If Owned
Name Mtg. Held By_____ Street_____ City_____ State_____

Previous
Address_____ City_____ State_____ How Long_____

Previous
Landlord_____ Address_____

Employed by_____ Street_____ City_____ State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Previous
Employer_____ Street_____ City_____ State_____ How Long_____

Wife's
Employer_____ Street_____ City & State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Other Income—
Give Details_____ Total Family Income $_____

Your Bank_____ Address_____ Type of Account_____

CREDIT REFERENCE (Give 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

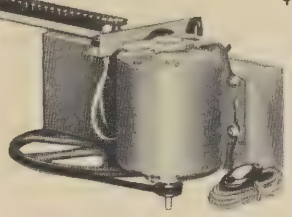
First Credit
Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit
Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

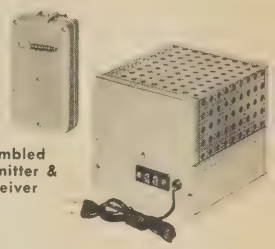
Nearest Relative_____ Address_____ Relationship_____
(Do not list those with whom you are living)

Money-Saving Auto Accessories





GD-20A
$124.90



Add New Convenience And Safety To Driving With A Heathkit Garage Door Opener Semi-Kit!

• New VHF portable "wireless" transmitter–so compact it fits in pocket & purse, or attaches to car's sun visor • No car battery drain • No permanent under-hood installation • New VHF receiver–installs in your garage in mere minutes • Operates at greater ranges–no CB interference • Easy one-man installation • Operates overhead track and most jamb & pivot doors up to 8' high • Foolproof safety device automatically disengages door when obstructed • Automatically turns on garage light when door is opened • Just assemble mechanism–transmitter & receiver are completely assembled, ready to use • No FCC license required–complies with FCC regulations • Operates well within new FCC radiation limits . . . won't interfere with aircraft radio frequencies • 2 year warranty on receiver & transmitter

OPEN SESAME! Just a touch of a button on the new "wireless" transmitter as you pull into your driveway, and your garage door opens & the light goes on. Another touch of the button once you're safely inside, and the door closes automatically, securely. A time delay on the mechanism-operated light allows plenty of time to enter the house or turn on the main lights.

NEW FACTORY ASSEMBLED VHF ELECTRONICS! Simply clip the pocket-size transmitter to sun visor, or store in glove compartment. And since it's wireless, there's no complicated mounting under the hood or dash . . . easy to move from car to car! A self-contained battery eliminates drain on car's battery. And the new super-regenerative receiver with RF stage takes just a few minutes to install. System operates on 230 to 290 mc . . . won't interfere with similar neighborhood units. Mechanism assembles quickly, easily, and may be purchased separately for push-button operation from house or garage. Automatic light feature may be extended to control your driveway or patio lights.

GD-20A, 69 lbs...mechanism, (1) transmitter, (1) receiver...no money down, $12 mo.....$124.90

GD-20B, 70 lbs...mechanism, (2) transmitters, (1) receiver...no money down, $14 mo.....$144.90

Kit GDA-20-3 Heathkit mechanism, 61 lbs. no money dn., $7 mo.....$69.95

GDA-20-4, (1) Transmitter, (1) Receiver 8 lbs...no money dn., $6 mo.....$54.95

GDA-20-5, (2) Transmitters, (1) Receiver 8 lbs...no money dn., $8 mo.....$74.95

KIT MECHANISM SPECIFICATIONS—125'' long x 8⅝'' high x 13'' wide. 100# max. operating force. Operates overhead track and most jamb & pivot doors up to 8' high. 117 V. AC. ¼ H.P. motor. Fused.

VHF TRANSMITTER SPECIFICATIONS—Powered by two Eveready #E-91 alkaline batteries. Uses one of six modulation frequencies approx. 16 kc, 18 kc, 20 kc, 22 kc, 24 kc, 26 kc. CK5676 RF osc. tube, 2N270 audio osc. transistor. 5½'' H x 3'' W x 1⅜'' D.

VHF RECEIVER SPECIFICATIONS—117 VAC, 10 watts. 6AB4 RF amplifier, 12AT7 detector-amplifier, 12AT7 amplifier-rectifier, 5696 relay control. RF frequencies approx. 225 mc, 230 mc, 235 mc, 250 mc, 255 mc, 290 mc, 295 mc. 5¾'' H x 6'' W x 6½'' D.



IO-20
$89.95

Diagnose Ignition Troubles With This Low Cost Analyzer

• Spots ignition troubles–shows results of corrective action • Just flip a switch to select any of 4 different patterns without switching leads • Expand any view horizontally or vertically for a "closer look" • Easy to use–detailed instruction manuals provided for assembly and operation • Use on any internal combustion engine with conventional non-transistor ignition system.

IDEAL GIFT FOR SPORTS CAR ENTHUSIASTS OR PROFESSIONALS! Shows shorted plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, etc. Complete manuals show what to look for on big 4½" screen, how to isolate trouble. Can be used with external DC to AC inverter. Easy to build. Features corrosion-resistant aluminum case. Compact . . . 8" H. x 9½" W. x 16" D. Order yours now!

Kit IO-20, 17 lbs...no money dn., $9 mo.....$89.95

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IO-20 SPECIFICATIONS—Rpm Range: 400-5000 rpm. **Displays:** Secondary, Primary, Parade, Super-imposed. **Screen size:** 4½'' diameter. **Dwell measurement:** 4, 6 & 8 cylinder calibration on face plate. **Pattern height:** Secondary circuit, approx. 1''. Primary circuit, 6 volt system ¾'', 12 volt system 1''. **Vertical expand ratio:** 2 to 1. **Horizontal expand ratio:** 10 to 1. **Cable length:** 12' pick-up clamp, 2' ground, primary and secondary clips. **Power requirements:** 105-125 V, 50/60 cycles AC, 30 watts.

ID-11
$14.95



Low Cost Timing Light Kit

•Easy to use–just plug into IO-20 Analyzer • Produces intense white light • Hard rubber case – 10' connecting cable • Simple to assemble

Kit ID-11, 3 lbs.....$14.95

For Engine Tune-Up Choose This Gilbert-Davis 4-Unit Basic Tester Set



GFP-83
$11.95

Ideal for auto tune-up & repair. Features Remote Starter switch w/push button & long neoprene lead wires; Compression Tester, reads 0-300 lbs., short stem w/15° offset for back cylinders; Fuel Pump Tester w/3-color dial calibrated 0-30 in. for vacuum & 0-7 lbs. press.; Engine Timing Light w/plastic case & long leads.

GFP-83, 4 lbs.....$11.95



FIND PARCEL POST ZONE ON MAP THEN REFER TO THIS RATE TABLE

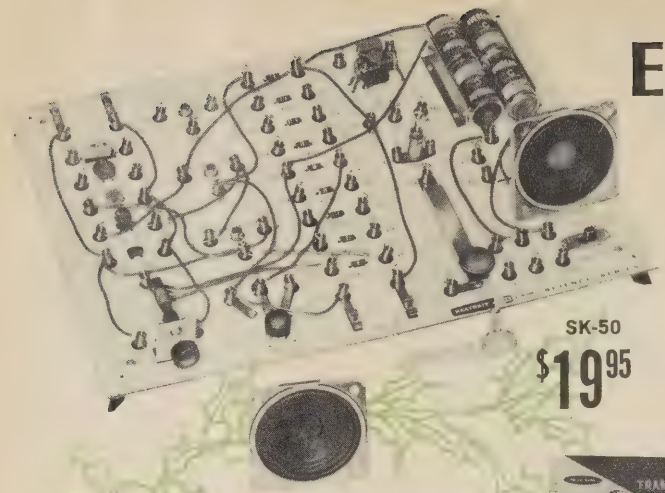
Postal Regulations . . . limit parcel post shipments to 20 pounds to zones 3 to 8, and 40 pounds to zones 1 and 2. EXCEPTION: Shipments up to 70 pounds will still be accepted to RFD addresses, and to APO numbers.

Ship. Wt.	Zone 1&2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Ship. Wt.	Zone 1&2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
to 2 lbs.	$.40	$.42	$.46	$.52	$.59	$.66	$.72	12 lbs.	.93	1.06	1.26	1.58	1.90	2.29	2.66
3 lbs.	.46	.49	.55	.64	.73	.83	.93	13 lbs.	.98	1.12	1.33	1.69	2.02	2.44	2.83
4 lbs.	.51	.55	.64	.75	.88	1.01	1.13	14 lbs.	1.03	1.18	1.41	1.79	2.14	2.60	3.01
5 lbs.	.57	.62	.72	.87	1.02	1.18	1.34	15 lbs.	1.08	1.24	1.48	1.89	2.25	2.75	3.18
6 lbs.	.62	.68	.80	.97	1.15	1.34	1.53	16 lbs.	1.13	1.30	1.56	1.99	2.37	2.90	3.36
7 lbs.	.68	.75	.88	1.07	1.28	1.50	1.73	17 lbs.	1.18	1.36	1.64	2.09	2.49	3.06	3.53
8 lbs.	.73	.81	.95	1.18	1.41	1.66	1.92	18 lbs.	1.23	1.42	1.71	2.20	2.61	3.21	3.71
9 lbs.	.78	.87	1.03	1.28	1.53	1.82	2.12	19 lbs.	1.28	1.48	1.79	2.30	2.73	3.36	3.88
10 lbs.	.83	.93	1.10	1.38	1.66	1.98	2.31	20 lbs.	1.32	1.54	1.86	2.40	2.85	3.51	4.06
11 lbs.	.88	1.00	1.18	1.48	1.78	2.14	2.48								

IMPORTANT: Parcel post rate changes enacted April, 1964 are reflected in this table.

INCLUDE MONEY FOR POSTAGE with your orders as we must pay postage on parcel post packages before we can send your merchandise.

Educational Heathgifts®



SK-50

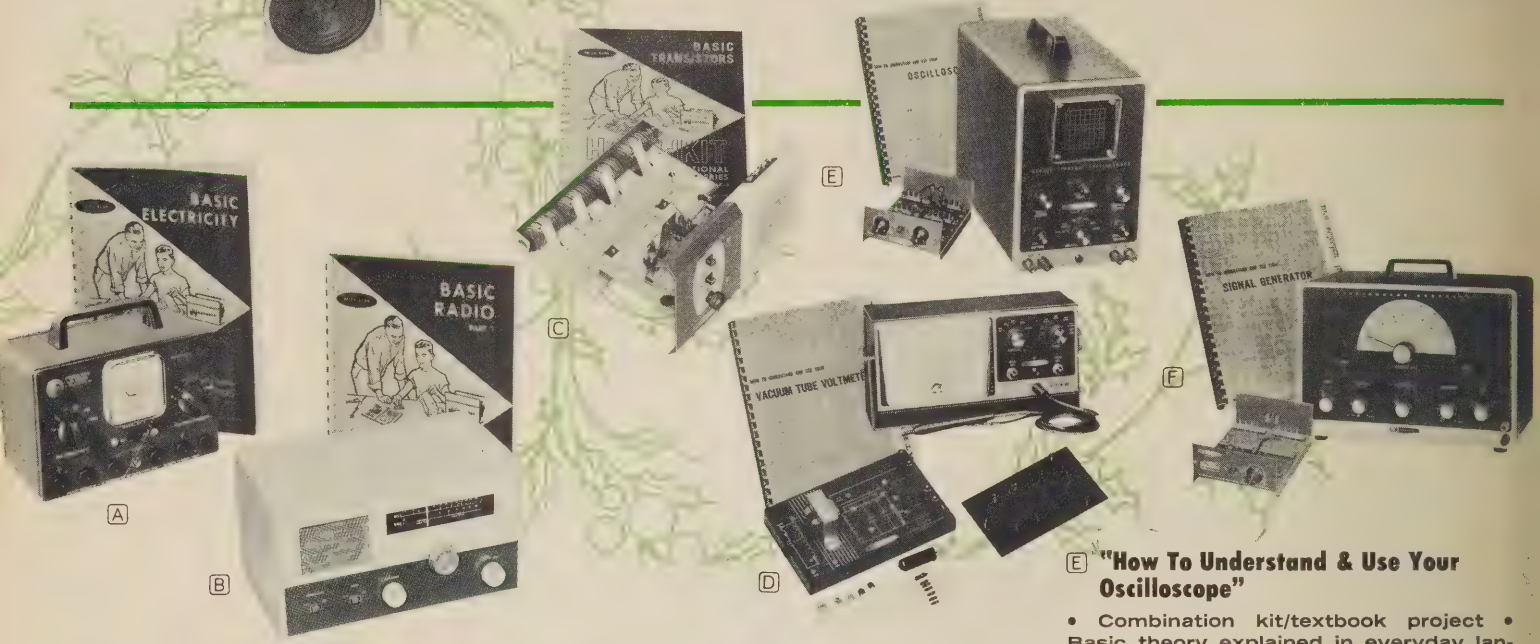
$19.95

Ideal Gift For Junior Scientists . . . Heathkit Electronic Workshop "19"

• Contains all materials & instructions for building 19 different electronic items • Includes code flasher, public address system, 5 different transistor radios, electronic timer, burglar alarm, electric eye, TV silencer, metronome, voice and capacity operated relays, and more • Fast, solderless, spring-type connectors • Operates on safe, economical flashlight batteries (not included)

HERE'S THE KIT YOU'VE ASKED FOR . . . The Electronic Workshop "19" lets your youngest scientist explore the exciting world of electronics through kits that are safe, truly practical, that "really work," and that can be re-built over and over again.

Kit SK-50. . . 4 lbs. **$19.95**



Ⓐ Basic Electricity Kit

• Ideal for beginners & students interested in electronics • Teaches principles of voltage, current, and resistance • Kit/Textbook combination • Designed by a science educator

LEARN BASIC ELECTRONICS AS YOU BUILD THIS HANDY KIT! . . . begin with basic experiments with dry-cell batteries, then assemble a DC volt-ohm-millammeter. Use the VOM to explore the laws of electronics . . . you'll discover a whole new world of knowledge. It can be the start of a fascinating career or spare-time hobby you will enjoy for years to come.

Kit EK-1 (Less batteries), 4 lbs. **$19.95**

Ⓑ Basic Radio . . . A 2-Part Course

• Progresses from a simple crystal set to a refined 2-band superheterodyne receiver • Simplified radio theory • Teaches as you build • The perfect father & son project • Part II adds on to components of Part I.

PART I BEGINS WITH ELEMENTARY THEORY—ENDS WITH THE COMPLETION OF A SENSITIVE REGENERATIVE RECEIVER. You'll investigate tuned circuits, the detection of radio signals, and more.

PART II CONTINUES WITH ADDITIONAL COMPONENTS & MORE ADVANCED THEORY — CONCLUDES WITH A 2-BAND SUPERHETERODYNE RECEIVER. You'll have a complete understanding of radio, and what's more, hear shortwave, marine, and amateur signals on the quality radio receiver you've built.

Basic Radio Part I (EK-2A), 7 lbs. **$18.75**
Basic Radio Part II (EK-2B), 5 lbs. **$18.75**
Accessory Cabinet for completed receiver, AK-8, 3 lbs. **$3.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Ⓒ Basic Transistors . . .

• Reveals the "How" & "Why" of transistors • Probes into the nature of matter, atoms, electrons, and how current flows • Requires no complicated mathematics —no technical vocabulary • Build a 2-station intercom

AN EXCELLENT COURSE FOR THE BEGINNER—AN EXCELLENT REFRESHER FOR THE TECHNICIAN. Through a step-by-step, easy-to-understand text and a wide variety of experiments, EK-3 explains transistor theory and transistor circuit applications. Test circuits include a two-transistor radio, a wireless broadcaster, an audio amplifier, and a test oscillator.

Kit EK-3 Basic Transistors, 4 lbs. **$16.95**

Ⓓ "How To Understand & Use Your Vacuum Tube Voltmeter"

• Combination kit/textbook project • Text applies to all VTVM's • Designed for self-teaching, formal classes in schools, or permanent reference for the technician • Buy in combination with Heathkit VTVM and save

GET THE MOST OUT OF THIS MODERN, VERSATILE INSTRUMENT. Learn the theory, advantages, and applications of the VTVM. Discover its multitude of uses. Here is an ideal course for the beginner, and yet a worthy refresher for the experienced technician. Progresses from basic theory to trouble shooting techniques. For special savings order with IM-11 or IM-13 VTVM's!

Kit EF-1, Text and special power supply (for VTVM owners), 3 lbs. **$8.95**
Kit EF-1-3, includes EF-1 and IM-11 VTVM, p. 29, 8 lbs. . . no money dn., $5 mo. **$32.50**
Kit EF-1-4, includes EF-1 and IM-13 VTVM, p. 29, 10 lbs. . . no money dn., $5 mo. **$39.95**

Ⓔ "How To Understand & Use Your Oscilloscope"

• Combination kit/textbook project • Basic theory explained in everyday language • May be combined with other Heath "How to Understand & Use . . ." courses for a complete teaching program • Buy in combination with Heathkit scope and save

TAKE THE MYSTERY OUT OF USING THE OSCILLOSCOPE! Well organized text provides a fresh, plain-talk approach to the basic theory and application of this highly versatile instrument. Progressive experiments reveal the intricacies of the oscilloscope in an easy-to-understand manner. Special chassis includes spring-clip components which may be used again and again.

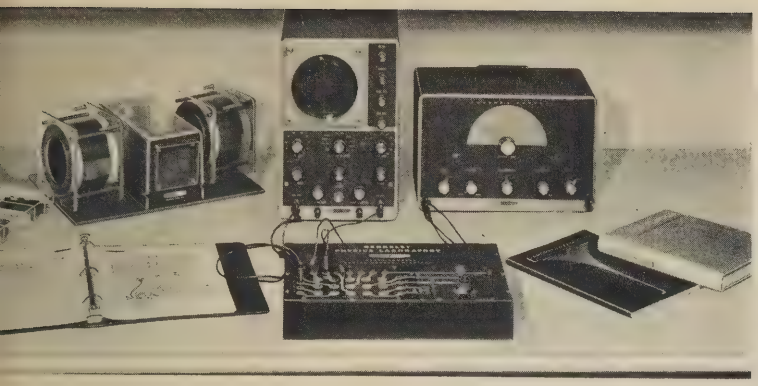
Kit EF-2, Text and special chassis & parts, 4 lbs. **$9.95**
Kit EF-2-3, includes EF-2 and IO-21 Oscilloscope, p. 31, 16 lbs. . . no money dn., $7 mo. **$62.95**
Kit EF-2-4, includes EF-2 and IO-12 Oscilloscope, p. 31, 28 lbs. . . no money dn., $9 mo. **$84.95**

Ⓕ "How To Understand & Use Your Signal Generator"

• Combination kit/textbook project • Applies to most signal generator types • Text remains a valuable reference source • Buy in combination with Heathkit Generator and save

LEARN THE PROPER USE OF SIGNAL GENERATORS. Course covers the theory, function, and use of RF and Audio Frequency generators. The special test chassis includes solderless "spring-clip" connectors which may be used over and over again to assemble the various test circuits in the course. Provides a thorough background for the service technician.

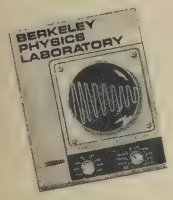
Kit EF-3, Text and special test chassis, 4 lbs. **$11.95**
Kit EF-3-2, Includes EF-3 and IG-102 Signal Generator, 10 lbs. . . no money dn., $5 mo. . . . **$37.95**
Kit EF-3-3, Includes EF-3 and IG-82, Sine-Square Generator, 18 lbs. . . No money dn., $7 mo. **$61.95**



Heath Berkeley Physics Laboratory

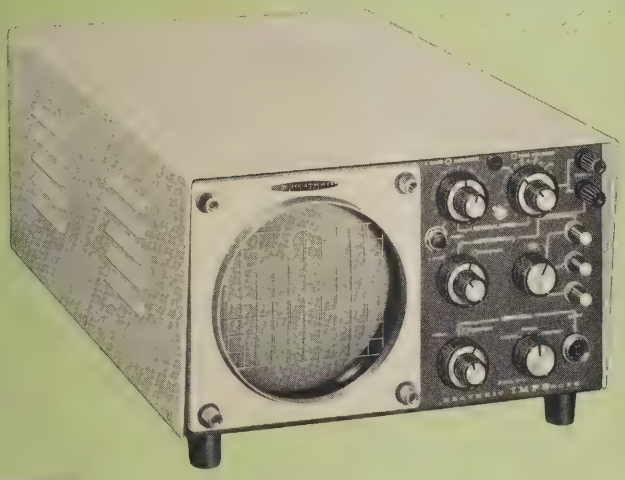
• Only the Berkeley Physics Laboratory as offered by Heath features a comprehensive instrumentation manual including pictorial diagrams of lab setups • Each unit a complete 2-student lab station • Available assembled or in kit form to fit budget requirements • Instruments may be purchased separately or as complete lab stations • Test chassis simulates actual circuit board construction • Standard components provide replacement parts • Instruments and components well proven through educational and professional use • Identical to the Heath test instruments and materials as used at Berkeley

Kit EP-100A...complete 2-student lab station.....**$396.72**
Assembled EPW-100A...complete 2-student lab station.....**$545.26**
Kit IO-12S, Laboratory 5" Oscilloscope.....**$ 76.95**
Assembled IOW-12S.....**$126.95**
Kit IG-102S, RF Signal Generator.....**$ 30.00**
Assembled IGW-102S.....**$ 60.00**
Kit IP-32, Regulated Power Supply.....**$ 56.95**
Assembled IPW-32.....**$ 84.95**
Kit IG-82, Sine-Square Wave Generator.....**$ 51.95**
Assembled EUW-27, Sine-Square Wave Generator.....**$ 94.00**
Kit IM-11, Vacuum Tube Voltmeter.....**$ 24.95**
Assembled IMW-11.....**$ 39.95**
Assembled EUW-17, Transistorized Power Supply.....**$ 20.00**
Assembled EPW-14, Test Chassis & Small Parts Set.....**$ 60.00**
Assembled EPW-24, Cathode Ray Tube & Deflection Coil Set....**$115.00**
EPA-10-1, Battery Set.....**$ 5.00**



FREE Brochure
Describes Heath Berekeley Physics Laboratory instruments and special components in detail. Includes the unique features of the Berkeley Laboratory as offered by Heath.

Heathkit IMPScope Brings Modern Instrumentation To School Biology And Physiology Labs

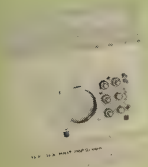


• Brings the most recent physiological instrumentation techniques to the student in the classroom • Stimulates new insight into biological and physiological phenomena • Readily comprehendible even by high school and junior high students • A complete teaching package consisting of a high-gain oscilloscope with built-in stimulator, a detailed laboratory sourcebook, and many accessories • Instruments and techniques developed under project IMPS, funded by the NSF and sponsored by the University of California, Berkeley • Not intended for medical diagnostic use

CHOSEN BY HIGH SCHOOLS, UNIVERSITIES, MEDICAL SCHOOLS, HOSPITALS, AND MEDICAL PEOPLE FOR THEIR "HOME" LABORATORIES . . . IMPScope IS AN INEXPENSIVE INSTRUMENT FOR THE STUDY OF PHYSIOLOGY. It clearly demonstrates the human EKG, a frog EKG, EKG's of other organisms, the frog sciatic nerve impulse, plethysmographic pulse pressure display, and many more physiological phenomena.

Kit EV-3, 27 lbs...no money down, $15 month.....**$160.00**
Assembled EVW-3, 28 lbs...no money down, $23 month.....**$250.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
EVA-3-1, Accessory Package: Includes nerve chamber, vector dolly, plethysmograph, frog electrodes & manual of instructions. 4 lbs....**$35.00**
EVW-3-1, Factory Assembled Accessories, 3 lbs.....**$50.00**

EV-3 SPECIFICATIONS—VERTICAL AMPLIFIER: Sensitivity: Switch selected; 200 microvolt, 1 millivolt, and 5 millivolts per centimeter. Variable from 200 microvolts to 5 millivolts per centimeter. **Bandwidth:** ±3 db from 0.25 to 2500 cps. **Input:** Balanced. **HORIZONTAL: Sweep frequency (rate per centimeter):** Slow, 0.15 to 5 sec. Medium, 7.5 milliseconds to 0.2 sec. Fast, 0.5 to 1.0 milliseconds: **Stimulator:** Rate: 6 to 30 stimuli per second. Recurrent stimulus or single stimulus with pushbutton—indicator light on front panel. **Stimulus duration:** 0.25 to 6 milliseconds. May be increased with an external capacitor—jack provided. **Power requirements:** 70 watts, 105-125 volts, 50/60 cps AC. **Dimensions:** Overall, 11½" W x 7½" H x 19½" D. **Net weight:** 17½ lbs.



FREE BROCHURE
Describes the IMPScope and reviews the phenomena it is capable of displaying. Includes detailed specifications.

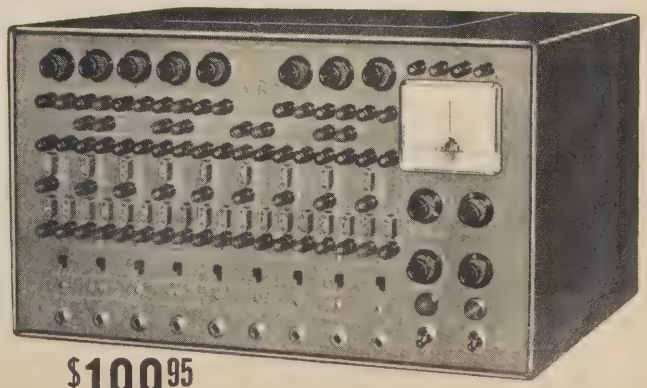
Heathkit Educational Electronic Analog Computer

• Ideal for teaching & training • Adds, subtracts, multiplies, divides . . . solves complex mathematical problems, including simultaneous 2nd order differential equations • Includes both construction manual and operating manual • Excellent instrument for exploring the electronic circuit analogies to pure mathematics

HANDLES SCORES OF COMPUTER PROBLEMS! Features 9 DC operational amplifiers, 3 initial condition power supplies, and 5 coefficient potentiometers. Provisions for balancing without removing problem setup.

Kit EC-1...48 lbs...no money down, $19 month.....**$199.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

EC-1 SPECIFICATIONS—Amplifiers: Open loop gain approximately 1000. Output—60 +60 volts at .7 ma. **Power supplies:** ±300 volts at 25 ma electronically regulated, variable from +250 to +350 by control with meter reference for setting +300 volts. Negative 150 volts at 40 ma regulated by VR tube. **Repetitive operation:** Multivibrator cycles a relay of adjustable rates (0.1 to 15 cps), to repeat the solution any number of times; permits observation of effect on solution of changing parameters. **Meters:** 50-0-50 ua movement. **Power requirements:** 105-125 volts, 50/60 cycles, 100 watts. **Dimensions:** 19⅝" W x 11½" H x 15" D.



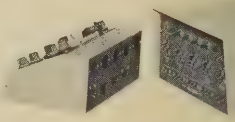
EC-1 $199.95

Heath-Built Lab Instruments

New Heath Malmstadt-Enke Controlled Potential Polarography System . . . Instrumentation For The Classroom And Research Laboratory



EUW-401 Complete Polarography System **$499.00**



The Heath Polarography Module EUA-19-2 couples by direct plug-in to the Malmstadt-Enke series Operational Amplifier EUW-19A, providing a highly versatile precision instrument for investigating polarographic chemistry.

• Provides qualitative & quantitative electrochemical analysis • Includes all necessary electronic instrumentation for 2-electrode (conventional), 3-electrode (non-aqueous or high-resistance), manual polarography, and amperometric titrations • May be used for a multitude of other forms of polarography when operated with suitable accessories • Completely assembled and tested

EUA-19-2 Polarography Module, 9 lbs. **$185.00**
EUW-19A Operational Amplfier, 22 lbs. **$135.00**
EUW-20A Chart Recorder, 23 lbs. **$199.00**
EUW-401 Complete Polarography System (consists of EUA-19-2, EUW-19A, EUW-20A), 54 lbs. **$499.00**
Further educational discounts available.

Free Brochure
Provides complete specifications of the EUW-401 System. Discusses the techniques of polarography. Briefly outlines experimental setups for various modes of polarography.

SPECIFICATIONS—Potential control: Electronically controlled potential for 2-electrode (conventional), and 3-electrode polarography. Max. output voltage: ±50 v.; current: ±1 ma. Stability: ±10 mv after warmup. Noise: 1 mv p-p or less at electrode potential output jack. Input resistance: approx. 100 megohms at reference electrode input. Electrode potential meter range: ±3 v. Electrode potential output resistance: 47 ohms. **Sweep generator:** Provides six calibrated sweep rates: 0.05, 0.10, 0.20, 0.50, 1.0, 2.0 volts/min.; with accuracy ±1%, individually calibratable to 0.1%. Linearity: better than 1% for 1 volt sweep. Range: ±5 v. Hold: will hold any potential ±mv for 1 min. or more. Output variable from 0 to ±50 v at 10 times the above sweep rates. **Current measurement:** Measures electrode current from 0.5 to 1000 microamperes full scale with calibrated ranges of: 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000 microamperes. Outputs: 10 v full scale and 100 mv full scale. Accuracy: ±1% at output jacks, ±3% on meter. Damping time constants: off, 0.1, 0.35, 0.7, 1.3, 2.5 sec. on 100 mv output only. Current suppression: up to ±90 microamperes in 2 ranges. Charging current suppression: up to 1 microampere/volt of sweep. **Adjustable Initial Potential:** Continuously variable with the range ±3 v. Accuracy: 0.5%. Repeatability of adjustment: ±5 mv. **External Control Voltage Inputs:** Providing an input impedance of 100K ohms to external function generators. Frequency response: down 3 db at 10 kc, 30 microsecond rise time. **Versatile Applications:** With suitable electrodes, burettes, etc., the Heath Malmstadt-Enke EUW-401 Polarography System provides all necessary instrumentation for direct reading or for strip chart readout from 2-electrode (conventional), 3-electrode (non-aqueous or high resistance), or manual polarography, and amperometric titrations. With the addition of appropriate function generators and readout devices, its capabilities are extended to coulometry, cyclic polarography, AC polarography, and harmonic, oscillographic, and phase polarography.

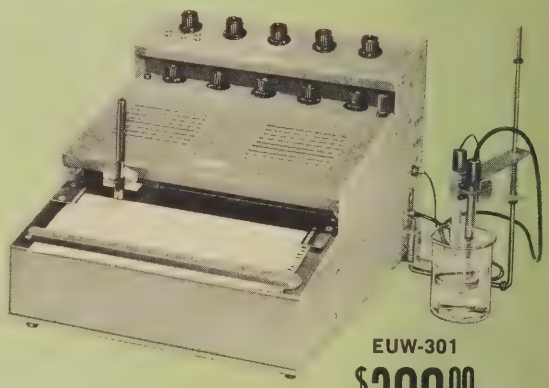
Heath Malmstadt-Enke Recording pH Meter/Recording Electrometer

FOR CLASSROOM USE OR EDUCATIONAL RESEARCH . . . here's the perfect recording pH meter. Full scale spans of 1, 2, 5, 10, and 14 pH units (e.g.; shows full scale span of pH 4 to 5, or any other one pH unit from 0 to 14). Readable to 0.1% full scale. Repeatable to 0.5% full scale. Excellent readout for pH Stat, or control for automatic burettes.

EUW-301, pH Recording Electrometer, 32 lbs. (pH electrodes not included)... no money down, $28 month. **$300.00**
EUA-20-23 New Sargent Combination pH Electrode. **$38.00**
EUA-20-11, pH Module only, 12 lbs. (converts Heath EUW-20A Servo-Recorder to pH Recording Electrometer)...no money down, $12 month. **$125.00**
EUA-301-1, Parts Kit, 2 lbs. (chopper, three 5-prong plugs and back cover) to convert recorder in EUW-301 to standard EUW-20A chart recorder. **$20.00**

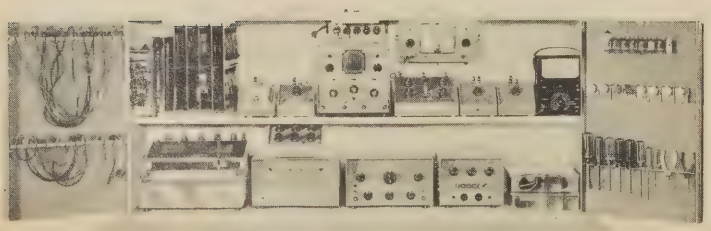


Send For FREE Brochure!
A brochure describing the functions and applications of the EUW-301 pH Recording Electrometer in detail is yours FREE by simply dropping a note or card with your name & address to the Heath Company, Benton Harbor, Michigan 49023.



EUW-301 **$300.00**

Heath Malmstadt-Enke Instrumentation Laboratory



HERE'S A COMPLETE ELECTRONIC LAB FOR SCIENTISTS AND ENGINEERS. All equipment is factory wired & tested. Provides a complete electronics adjunct to chemistry research or biochem lab . . . provides a complete university-level classroom unit for teaching electronics and instrumentation. Complete text & lab manual included.

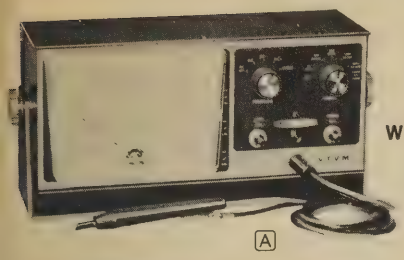
EU-100A, Complete Electronics Lab. **$1100.00**
EUP-22A, All Steel Desk Top Cabinet. **$130.00**



Free Descriptive Brochure
Gives full descriptions of entire Malmstadt-Enke Lab System and components. Complete with specifications and prices. Write for your free copy today.

Test Instruments

HEATHKIT®



Kit IM-13
$32.95
Wired IMW-13
$49.95

Ⓐ



Kit IM-11
$24.95
Wired IMW-11
$39.95

Ⓒ

Kit IM-21
$33.95
Wired IMW-21
$52.95



Ⓑ

Ⓐ Heathkit "Service Bench" VTVM . . . For Technician And Hobbyist

• 7 AC volts, 7 DC volts, 7 resistance ranges • Separate 1.5 & 5 v. AC scales • Gimbal bracket for under-shelf, or bench-top mounting • 6" 200 ua meter • One test probe for all measurements • 1% precision resistors

Kit IM-13, 7 lbs. . . . no money dn., $5 mo. **$32.95**
Assembled IMW-13, 7 lbs. . . no money dn., $5 mo. **$49.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
Kit EF-1-4, Comb. Offer with EF-1 Applications Course, pg. 26, 10 lbs. . . no money dn., $9 mo. **$39.95**

IM-13 SPECIFICATIONS—Same as IM-11 above except with 6" meter and separate 1.5 & 5 VAC RMS replacing Peak-to-Peak scales. **Dimensions:** 5'' H x 12 11/16'' W x 4 1/8'' D.

Ⓑ Heathkit IM-11 . . . World's Most Popular VTVM

• Single AC/Ohms/DC probe for all measurements • 7 AC, 7 DC, 7 Ohms ranges • Easy to read 4½" 200 ua meter • 1% precision resistors • Extended low frequency response ± 1 db from 25 cps to 1 mc • Electronically stable circuit board construction

MOST POPULAR HEATHKIT INSTRUMENT FOR OVER 15 YEARS! Convenient size, a practical selection of meter ranges, and the single test probe have made the IM-11 a favorite with hams, service technicians, and science educators.

Kit IM-11, 5 lbs. . . no money dn., $5 mo. **$24.95**
Assembled IMW-11, 5 lbs. . . no money dn., $5 mo. **$39.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
See Page 26 for combination offer with EF-1 Applications Course. 8 lbs. no money dn., $5 mo. **$32.50**

IM-11 SPECIFICATIONS—Meter scales: D C & AC (IRMS): 0-1.5, 5, 15, 50, 150, 500, 1500 volts full scale. **AC peak-to-peak:** 0.4, 14, 40, 140, 400, 1400, 4000. **Resistance:** 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures .1 ohm to 1000 megohms with internal battery. **Meter:** 4½'' 200 ua movement. **Multipliers:** 1% precision type. **Input resistance DC:** 11 megohms (1 megohm in probe) on all ranges. **AC input impedance:** 1 megohm shunted by 40 uuf (measured at input terminals). **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ± 3%, AC ±5% of full scale. **Frequency response:** ±1 db 25 cps to 1 mc (600 ohm source). **Tubes:** 12AU7, 6AL5. **Battery requirements:** 1.5 volt, size "C" flashlight cell (not included). **Power requirements:** 105-125 volt 50/60 cycle AC, 10 watts. **Dimensions:** 7 3/8'' H x 4 11/16'' W x 4 1/8'' D.

Ⓒ Heathkit AC VTVM . . . For The Lab . . . For The True Audiophile

• Provides accurate audio frequency measurements • 10 ranges —0.01 to 300 volts RMS full scale • Extended frequency response, ± 1 db, 10 cps to 500 kc • 10 megohm input impedance • Calibrated db scale

AN IDEAL INSTRUMENT FOR MONITORING AUDIO SIGNALS & FOR AUDIO SYSTEM CHECKOUT. High input impedance enables the measurement of voltages in sensitive circuits without appreciable loading. Available kit or assembled . . . a valuable gift for the true audiophile.

Kit IM-21, 5 lbs. . . no money dn., $5 mo. **$33.95**
Assembled IMW-21, 5 lbs. . . no money dn., $6 mo. **$52.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IM-21 SPECIFICATIONS—Frequency response: ±1 db 10 cps to 500 kc, ±2 db 10 cps to 1 mc, all ranges. **Ranges:** Ten ranges from 0.01 to 300 volts RMS full scale. **Decibels:** ten switch selected ranges from —40 db to +50 db in 10 db steps. Total range —52 to +52 db, meter scale —12 to +2 db. (0 db =1 mw in 600 ohms). **Input impedance:** 10 megohms shunted by 12 uuf on ranges 10 to 300 volts, 10 megohms shunted by 22 uuf on ranges .01 to 3 volts. **Tube complement:** (1) 6AW8, (1) 6EJ7/EF-184. **Accuracy:** Within 5% of full scale. **Power requirements:** 105-125 volts AC, 50-60 cycles, 10 watts. **Dimensions:** 7 3/8'' H x 4 11/16'' W x 4 1/8'' D.

30,000 Volt DC High Voltage Probe Kit

Permits high voltage measurements with any 11 megohm input VTVM. 100 to 1 attenuation. Insulating fins assure maximum safety.

Kit 336, 1 lb. **$4.50**
Assembled 336W, 1 lb. **$5.50**

Scope Demodulator Probe Kit

Built in detector-filter demodulates RF & IF signals for oscilloscope presentation of AF envelope. 30 VAC RMS, 500 VDC.

Kit 337-C, 1 lb. **$3.50**
Assembled 337W-C, 1 lb. **$4.50**

Etched Circuit RF Probe Kit

Measures RF signals up to 250 megacycles with any 11 megohm input VTVM.

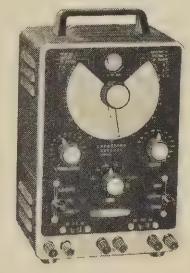
Kit 309-C, 1 lb. **$3.50**
Assembled 309W-C, 1 lb. **$4.50**

Ⓓ

MM-1
$29.95



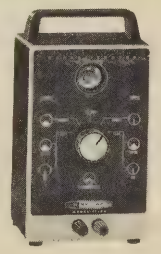
Ⓔ



Kit IT-11
$29.95
Wired ITW-11
$49.95

Ⓕ

IT-22
$10.95



Ⓖ

IT-12
$19.95



Ⓓ Heathkit Volt/Ohm/Millammeter—20,000 Ohms/Volt

• 35 accurately ruled meter ranges on 2-color scale • Sensitive 50 microampere 4½" meter • 1% precision resistors for accuracy & stability • Features polarity reversing switch • Ideal for service technicians, hams, & hobbyists

Kit MM-1, 5 lbs. . . no money dn., $5 mo. **$29.95**

MM-1 SPECIFICATIONS—Range AC & DC volts: Full scale, 1.5, 5, 50, 150, 1500, 5000. **Direct current:** 150 microamperes, 15, 150, 500 millamperes, 15 amperes. **Ohmmeter:** 0.2 ohms to 20 megohms in three ranges. **Decibels:** —10 + 65 db. **Accuracy:** ± 3% of full scale. **Batteries:** 1 type "C" cell, 4 penlight cells. **Dimensions:** 7½'' x 5½'' x 4''.

Ⓔ Heathkit Capacitor Checker—IT-11

• Test all capacitor types quickly • Direct reading scales—no involved calculations • Low bridge voltage for safe testing of miniature electrolytics • Measures resistance: 5 ohms to 50 megohms; capacitance: 10 uuf to 1,000 uf • Comparator circuit measures "L," "C," or "R," with external standard • Calibrated power factor control • Eye tube null & leakage indicator

Kit IT-11, 7 lbs. . . no money down, $5 mo. **$29.95**
Assembled ITW-11, 9 lbs. . . no money down, $5 mo. **$49.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Ⓕ Heathkit "In-Circuit" Capaci-Tester . . . For Easier Trouble-Shooting & Servicing

• Spots open, shorted, or intermittent capacitors without removing them from the circuit • Saves valuable time in trouble-shooting circuits • Fast & simple to use • Built-in self test

Kit IT-22, 4 lbs. **$10.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IT-22 SPECIFICATIONS—Range: Open Test, 50 uufd to infinity, shunted by more than 2 K ohms at 50 uufd, 400 ohms at 100 uufd, 30 ohms at 350 uufd or more. Short test, up to 20 ufd shunted by at least 10 ohms. **Test frequencies:** Short test, 60 cycles. Open test, 19 mc. **Power requirements:** 105-125 V, 50-60 cycles AC, 5 watts. **Cabinet size:** 7 3/8'' H x 4 11/16'' W x 4 1/8'' D.

Ⓖ Heathkit Visual-Aural Signal Tracer—IT-12

• Traces RF, IF and audio signals • Quickly isolates defective stage in circuit under test • Locates noisy and intermittent components • Single, convenient audio-RF probe with switch • Tests transistor equipment safely • Signals are traced visually with an "electron eye" and audibly with amplifier-speaker • Doubles as a test-bench utility amplifier or speaker

Kit IT-12, 6 lbs. **$19.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Save Up To 50% On Heath Laboratory

Heathkit FM Stereo Generator

• Provides virtually all signals required for trouble-shooting & alignment of multiplex adapters, FM tuners & receivers

Kit IG-112, 11 lbs. . . No money dn., $10 mo. **$99.00**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-112 SPECIFICATIONS—RF Signal Frequency: 100 mc adjustable by approx. ±2 mc. **Pilot modulating frequency:** 19 kc ±2 cps. **FM Modulation:** Left channel (stereo), right channel (stereo), Phase test (left plus right channel in phase), Monophonic FM. **Deviation:** Adjustable to 75 kc. **Sweep rate:** (used for RF and IF alignment) 60 cps. **Sweep width:** (used for RF and IF alignment) Adjustable to 750 kc. **RF Attenuator range:** 60 db in 20 db steps. **Crystal-controlled markers:** 10.7, 90.95, 96.30, 101.65, & 107 mc. **Composite signal output:** Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). **Audio output:** 400, 1000, & 5000 cps; 19 kc (±2 cps); 38 kc; & SCA (65 or 67 kc). **Distortion:** (At 400, 1000 & 5000 cps) Less than 5%. **Front panel controls:** 19 kc pilot level control, deviation-sweep width-composite level-audio level control, function switch, frequency switch, & RF attenuator switches. **Rear panel adjustments:** Balance adjust, 38 kc sync, pilot level adjust, & SCA frequency switch. **Chassis adjustments:** Oscillator adjust, frequency adjust & modulation adjust. **Tube complement:** 12AT7—19 kc oscillator & 19 kc doubler; 6AU8—19 kc buffer & 38 kc amplifier; 6AN8—Reactance tube modulator & 100 mc oscillator; (3) 12AU7—Audio osc., audio cathode follower & 19 kc pilot amplifier; composite/audio amplifier & 5.35 mc crystal osc. **Power requirements:** 105-125 volts AC, 50/60 cps, 35 watts. **Dimensions:** 10¼" H x 8" D x 13" W.

Heathkit TV Sweep Alignment Generator

• All the essential facilities for speedy alignment of FM & TV receivers

Kit IG-52, 14 lbs. . . No money down, $7 mo. **$67.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-52 SPECIFICATIONS—Output impedance: 50 ohms terminated at both ends of cable. **Sweep deviation:** Continuously variable from 0-4 mc lowest max. deviation to 0-42 mc. highest max. deviation (depending on base frequency). **Crystal marker:** 4.5 mc and multiples thereof. **Variable marker:** 19 mc to 60 mc on fundamentals, 57 mc to 180 mc on harmonics. **External marker terminals:** Provided on panel. **Attenuators:** Step-switch controls sweep and marker oscillators together, plus variable controls for each output. **Blanking:** Converts return trace into zero reference line, phasing control also provided. **Cables:** 3 supplied, output, scope horizontal, scope vertical. **Power requirements:** 105-125 VAC, 60 cycles, 50 watts. **Dimensions:** 13" W x 8½" H x 7" D.

Heathkit Color Bar & Dot Generator

• No other service instrument on the market today offers such an array of features, performance, and quality at such a low price!

Kit IG-62, 13 lbs. . . No money down, $7 mo. **$64.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-62 SPECIFICATIONS—RF output frequency range: TV channels 2 through 6. **Output voltage:** Variable from 100 to 100,000 microvolts. **Sound carrier:** Crystal controlled, unmodulated, 4.5 mc away from picture carrier; off-on switch provided. **Video output:** Positive or negative output variable from 0-10 volts peak-to-peak open circuit. **Modulation:** White dot pattern, cross hatch pattern, horizontal bars, vertical bars, 10 vertical color bars, shading bar pattern. **Tube complement:** 6-12AT7, 4-12AU7, 1-6BQ7, 1-6CS6, 1-OB2. **Power requirements:** 117 VAC, 50/60 cycles, 70 watts. **Dimensions:** 13" W x 8½" H x 7" D.

Heathkit "Low-Ripple" Battery Eliminator

• Switch selected 6 or 12 volts • Metered output voltage & current

Kit IP-12, 18 lbs. . . no money dn., $5 mo. **$47.50**

Assembled IPW-12, 21 lbs. . . no money dn., $6 mo. **$59.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IP-12 SPECIFICATIONS—Continuously variable output: 6 volt range: unfiltered, 10 amp continuous, 15 amp maximum; filtered, 5 amp continuous, less than .3% ripple. 12 volt range: unfiltered, 5 amp continuous, 7.5 amp maximum; filtered, 5 amp continuous, less than .3% ripple. **Power requirements:** 105-125 volts 50/60 cycles AC at 200 watts. **Dimensions:** 13" W x 8½" H x 7" D.

Heathkit "Solid-State" Regulated DC Power Supply

• The perfect laboratory power supply—features both current & voltage regulation

Kit IP-20, 13 lbs. . . No money down, $8 mo. **$72.95**

Assembled IPW-20, 16 lbs. . . No money down, $11 mo. **$114.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IP-20 SPECIFICATIONS—Input: 105-125 volts 60 cps; 125 watts at full load (50V, 1.5A). **Output:** 0.5-50 volts DC; 1.5 amps max. DC. **Load regulation:** ±15 millivolts, can be adjusted for no change. **Line regulation:** (105 to 125 VAC): Less than .005% change. **Ripple & noise:** Less than 150 microvolts. **Transient response:** Less than 25 microseconds. **Output impedance:** Less than .1 ohm DC to 10 kc; less than .5 ohms 10 kc & up. **Overload protection:** Current limiter & relay. **Meter:** 3½", 1 ma, 50 ohm. **Current ranges:** 50 ma, 150 ma, 500 ma, 1.5 amp. **Voltage ranges:** 5V, 15V, 50V. **Front panel controls:** On/Off, Coarse voltage switch, Fine voltage adjust, Current range switch, Current limit adjust, Meter slide switch, DC regulation. Reset Standby toggle switch. **Output terminals:** (3), plus (+), minus (—) chassis ground. **Dimensions:** 9½" H x 6½" W x 11" D.

Heathkit Variable-Voltage DC Regulated Power Supply

• Furnishes B+, Bias, & Filament voltages • Standby switch allows test circuit filament to remain on

Kit IP-32, 17 lbs. . . no money dn., $6 mo. **$56.95**

Assembled IPW-32, 18 lbs. . . no money dn., $9 mo. **$84.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IP-32 SPECIFICATIONS—Output: 0-400 volts regulated DC at 0-100 ma cont., 125 ma intermittent, 0 to -100 volts DC at 1 ma variable bias voltage, 6.3 volts AC at 4 amps., filament voltage. **Regulation:** Output variation less than 1% from no load to full load. Output variation less than 1% for a ±10 v. change at 117 V. AC input. **Ripple:** Less than 10 millivolts RMS, ripple, jitter and noise. **Output impedance:** Less than 10 ohms, DC to 1 mc. **Meters:** Voltmeter 0-400 V or 0-150 V.; Milliammeter 0-150 ma. **Dimensions:** 13" W x 8½" H x 7" D.



& Test Instruments

HEATHKIT®

Heathkit Wide-Band 5" Laboratory Oscilloscope

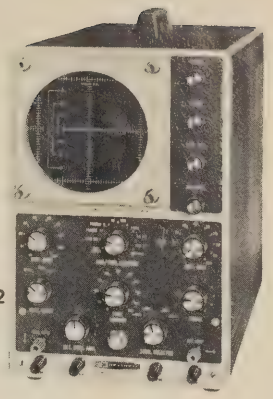
• Preferred by thousands who demand a high performance instrument • 10 cps to 500 kc horizontal sweep range assures maximum versatility • Two choices for "pre-set" sweep frequencies adds extra convenience to TV alignment procedures

Kit IO-12, 24 lbs...no money dn., $8 mo. $76.95
Assembled IOW-12, 23 lbs..no money dn., $12 mo. $126.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

See page 26 for comb. offer with EF-2 Applications Course $84.95

IO-12 SPECIFICATIONS—(Vertical) Sensitivity: 0.025 volts RMS per inch at 1 kc. **Frequency response (referred to 1 kc level).** ±1 db, 8 cps to 2.5 mc; +1.5 to —5 db, 3 cps to 5 mc; response at 3.58 mc, —2.2 db. **Rise time:** 0.08 microseconds or less. **Input impedance:** (AT 1 KC) 2.7 megohms at X1; 3.3 megohms at X10 and X100. **(Horizontal) Sensitivity:** 0.3 volts RMS per inch at 1 kc. **Frequency response:** ±1 db, 1 cps to 200 kc; ±3 db, 1 cps to 400 kc. **Input impedance:** 4.9 megohms at 1 kc. **Sweep generator:** Range—10 cps to 500 kc in five steps, variable, plus any 2 switch-selected preset sweep frequencies in this range. **Synchronizing:** automatic lock-in circuit using self-limiting synchronizing cathode follower. **Power requirements:** 105-125 volts 50/60 cycles AC at 80 watts; fused. **Dimensions:** 14⅛" H x 8⅝" W x 16" D.

Kit IO-12 $76.95
Wired IOW-12 $126.95





IO-10 $89.95

Heathkit "Space-Saver" 3" DC Oscilloscope . . . Ideal For Design Work, Computer Readout and Biological Research

• Identical vertical & horizontal AC or DC coupled amplifiers • DC to 200 kc bandwidth

Kit IO-10, 16 lbs...no money dn., $9 mo. $89.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IO-10 SPECIFICATIONS—(Vertical and horizontal channels identical): Bandwidth: DC to 200 kc (2 db point). **Sensitivity:** 0.1 V (peak-to-peak) per ¼" (uncalibrated). **Attenuator:** 3-position, compensated type. **Gain control:** Continuously variable. **Input impedance:** 3.6 megohms shunted by 35 mmf. **Coupling:** Either AC or DC, switch-selected. **Relative phase shift between channels:** Less than 5°. **Sweep generator (Recurrent type):** Linear saw-tooth produced by multivibrator type generator covering 5 cps to 50 kc in four overlapping ranges. "External capacitance" binding post for lower sweep rates. **Sync provision:** Either internal or external, switch-selected. **Power requirements:** 105-125 V 50-60 cycle AC at 100 watts max. **Dimensions:** 7⅝" H x 4⅝" W x 11" D.

Heathkit "General Purpose" 3" Oscilloscope . . . For Service Shop, Ham Shack, Or Classroom

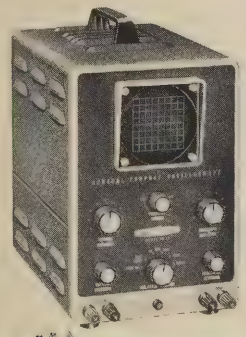
• Push-pull vertical and horizontal amplifiers • 20 to 100,000 cps horizontal sweep • Automatic sync-retrace blanking

Kit IO-21, 12 lbs...no money dn., $6 mo. $54.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

See page 26 for comb. offer with EF-2 Applications Course $62.95

IO-21 SPECIFICATIONS—(Vertical and horizontal amplifiers identical): Frequency response: ±2 db, 2 cps, to 200 kc. **Sensitivity:** .25 volts RMS/inch P-P deflection at 1 kc. **Input impedance:** 10 megohms shunted by 20 uuf. (Direct connection to vertical CRT plates on rear panel). **Sweep generator:** Range 20-100,000 cps. Automatic sync, retrace blanking. **Tube complement:** (1) 3RP1 (CR tube), (4) 12AU7 (deflection amplifiers), (1) 12AX7 (sweep generator), (1) 6X4 (LV rectifier), (1) 1V2 (HV rectifier). **Controls:** Gain controls, Horizontal & Vertical; Centering controls, Horizontal & Vertical; Frequency Vernier; Horizontal Input, Sweep Range switch. (Focus and Astigmatism controls mounted on chassis). **Power requirements:** 105-125 volts AC, 50-60 cycle, 40 watts. **Dimensions:** 9½" H x 6½" W x 10" D.

IO-21 $54.95



Heathkit Scope Demodulator Probe

Permits oscilloscope display of detected AF waveform from RF & IF signals. Functions as AM detector. 30 volts RMS & 500 VDC maximum.

Kit 337-C, 1 lb. $3.50
Assembled 337W-C, 1 lb. $4.50

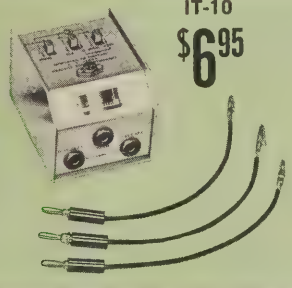
Heathkit Low-Capacitance Oscilloscope Probe

Matches scope input to high frequency circuits by adjustable trimmer capacitor. Slide switch for direct of X10 attenuation. An assortment of connectors is included with the kit to match most oscilloscope terminals.

Kit PK-1, 1 lb. $4.95



IM-30 $54.88



IT-10 $6.95



TT-1A $149.95



IT-21 $44.95

Heathkit Laboratory Transistor Tester

• Provides complete DC analysis of PNP & NPN transistors

Kit IM-30, 9 lbs...no money dn., $6 mo. $54.88

IM-30 SPECIFICATIONS—Checks: Transistors up to 15 amps and diodes up to 1.5 amps. **Tests:** Shorts, DC Gain (Beta 0-300) (Alpha 0-.9967), Leakage (Icbo, Iceo), Diode Forward & Reverse Current. **Power supply:** Internal, seven 1.5 volt size D batteries provide 1.5, 3, 4.5, 6, 7.5, 9 volts collector supply for gain or leakage and 1.5 volts for bias; external, 0-50 volts for gain, 0-150 volts for leakage and 0-5 volts for bias. **Bias control:** Permits any collector current from 10 ua to 15 amps for gain tests. **Gain control:** 3% wire-wound potentiometer has calibrated scales to give DC Beta and DC Alpha directly when meter is at null. **Transistor & diode connections:** Universal transistor socket and binding posts.

Heathkit Transistor-Diode Checker

• Tests for leakage, short, open, and current gain • Tests diode forward and reverse current • Checks continuity

Here's the compact transistor checker you need for testing and servicing requirements. Less batteries.

Kit IT-10, 2 lbs. $6.95

IT-10 SPECIFICATIONS—Switches: Forward-Reverse/PNP-NPN, Diode/HI-LO, Leakage-Gain. **Power supply:** Self-contained, two 1.5 volt size "C" flashlight cells. **Dimensions:** 3⅛" H x 3⅛" W x 3¾" D.

Heathkit Mutual-Conductance Tube Tester

• No finer tube tester in kit form anywhere • Features ultra-sensitive grid current test

Kit TT-1A, 33 lbs...no money dn., $14 mo. $149.95

TT-1A SPECIFICATIONS—Power requirements: Voltage: 105-125, 60 cycle AC. Watts: 10-60. **Testing circuits:** Gm; mutual conductance for amplifiers, 0-24,000 micromhos. Emission: rectifiers & diodes. Leakage: direct reading ohmmeter. Grid current: ¼ microampere sensitivity. Voltage regulator: firing voltage and regulation tolerance. Low power thyratron: grid characteristics, conduction capabilities. Eye tubes: control grid characteristics. **Line voltage adjustment:** Continuously variable. **Roll chart mechanism:** Constant tension, illuminated. **Dimensions:** Cabinet (outside): 17¾" W x 13½" H x 8" D. Panel & chassis: 17" W x 12¾" H x 5½" D.

Heathkit Tube Checker

• Tests nearly all tube types • Provides all necessary emission-type test functions

Kit IT-21, 12 lbs...no money dn., $5 mo. $44.95

IT-21 SPECIFICATIONS—Tests: Emission, short, leakage, open element, filament continuity. **Sockets:** 4-pin, 5-pin, 6-pin, 7-pin combination and pilot light, 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. **Meter:** 1 ma, BAD-?-GOOD scale, illuminated. **Line voltage adjustment:** Step type. **Roll chart mechanism:** Constant tension, illuminated. **Power requirements:** 105-125 VAC, 50/60 cps. **Dimensions:** 5½" x 8½" x 13"

For The Gift Most Appreciated... Choose Heathgift®

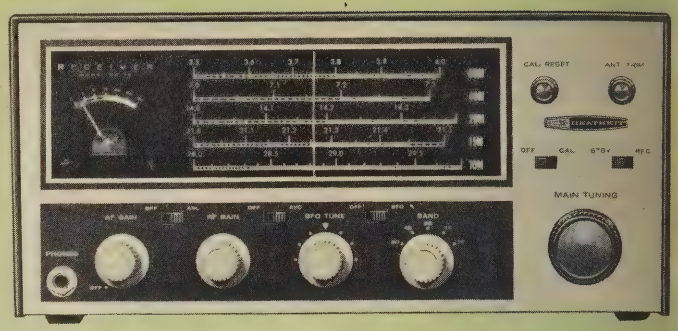
Heathkit HR-10 Amateur Band Receiver

• Amateur band coverage only for maximum stability & accuracy • Tunes SSB, AM, & CW on 80 through 10 meter bands • Lattice-type crystal filter for high selectivity • Provisions for plug-in crystal calibrator • Superheterodyne circuit with RF stage for extra sensitivity • Accurately ruled, easy-to-read dial calibrations • Prebuilt, prealigned tuning unit for fast, simple assembly

PERFECT FOR THE NOVICE! The HR-10 is a fine receiver any amateur would be proud to own. It includes features you find in the most expensive receivers—an "S" meter to indicate signal strength, separate RF and AF gain controls, an accessory power socket, and BFO tuning. The HR-10 has the solid stability you need for listening to SSB or working CW, and you'll appreciate its sensitivity and selectivity as you pull weak signals out of the "mud". The HR-10 will prove itself a real performer whatever your test for receiver quality.

Kit HR-10, 20 lbs...no money dn., $8 mo.....$75.00
Kit HRA-10-1, Plug-in 100 kc crystal calibrator, 1 lb.....$8.95
Kit HS-24, Speaker, 4 lbs. (See pg. 34 for details).....$7.00
Export model available for 115/230 VAC, 50-60 cps; write for prices.

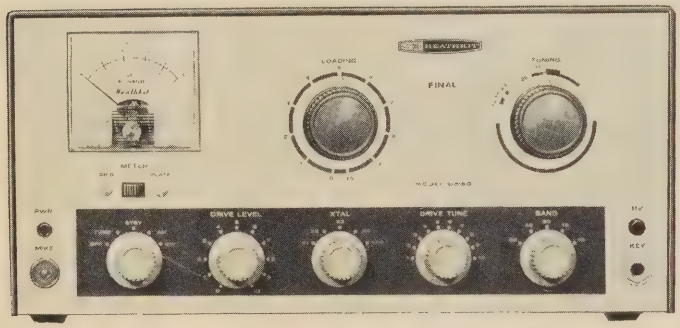
HR-10 SPECIFICATIONS—Frequency coverage: 80 through 10 meters. **IF frequency:** 1681 kc. **Sensitivity:** 1 uv for 10 db signal-to-noise ratio. **Image rejection:** 40 db or better. **Selectivity:** 3 kc at 6 db, 9 kc at 40 db. **Input impedance:** 50 to 75 ohm, coaxial. **Audio output impedance:** 8 or 500 ohm. **Tube complement:** 6BZ6, (2) 6EA8, 6BA6, 6BJ7, 6EB8, 6X4. **Power requirements:** 117 volts AC, 50/60 cycles, 50 watts. **Dimensions:** 13¾" W x 11½" D x 6½" H.



HR-10
$75.00

Heathkit DX-60A Phone & CW Transmitter . . . Mate To The HR-10

• 90 watts phone or CW-80 through 10 meters • Neutralized 6146 final amplifier • Built-in low pass filter • Grid block keying—easy access to crystal sockets • May be run at reduced power for novice operation • Transmitter mate of the HR-10



NOVICE OR OLD-TIMER, CHOOSE THE DX-60A! If you're a novice, the DX-60A is right for you. Operate it at the required 75-watt maximum (crystal control) for novice class CW . . . and later when you get your general class phone license, go to VFO control and use the DX-60A's full 90 watts of power. (See the HG-10 VFO below, an excellent VFO for the DX-60A). No transmitter in this price range will offer you more.

CHECK THESE ADVANCED FEATURES . . . a low-pass filter suppresses harmonic interference, a neutralized final amplifier for high stability, excellent grid block keying, switch selection of four crystal positions or external VFO for full coverage of amateur bands, and single-knob bandswitching. Compare! . . . you'll choose the Heathkit DX-60A.

Kit DX-60A, 24 lbs...(less crystals)...no money dn., $8 mo.....$79.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

DX-60A SPECIFICATIONS—Power input: 90 watts peak; controlled carrier phone, or CW. **Output impedance:** 50-75 ohm (coaxial). **Output coupling:** Pi-network. **Operation:** CW or AM phone—crystal or VFO control. **Band coverage:** 80 through 10 meters. **Power Requirements:** 105-125 V., 50-60 cps, 225 watts. **Dimensions:** 13¾" W x 11½" D x 6½" H.

DX-60A
$79.95



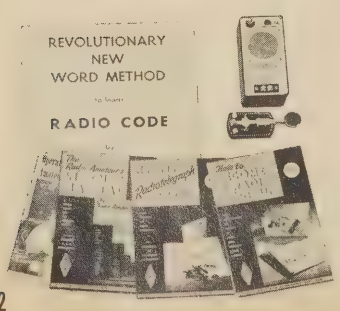
HDP-293
$4.00

Radio Amateur's Handbook

THE FOREMOST REFERENCE BOOK IN AMATEUR RADIO! Covers all phases of theory, construction, and operating principles. Includes "plain-talk" sections on basic electronics; receivers and transmitters for HF, VHF, UHF; gear for AM, CW, and SSB; antennas; and workshop practices; plus, comprehensive tube and transistor data.

HDP-293, 3 lbs.....$4.00

Learn About Amateur Radio . . . Obtain Your FCC License



HERE'S THE WAY TO BECOME A RADIO "HAM." A complete course, including 4 authentic ARRL handbooks, a code practice oscillator with key, and a set of 3 records that teach code by the revolutionary "word-method."

HDP-22, Amateur Radio Starter Group, 6 lbs. Save $3.00....$15.95
HDP-32, Code Records only... 2 lbs.....$9.50
HDP-42, ARRL Books only (4)... 2 lbs.....$2.00
Kit CO-1, Oscillator plus Key only 2 lbs.....$7.95

Low-Cost "Benton Harbor Lunch Boxes" For 6 & 2 Meters

COMPLETE TRANSCEIVERS . . . 5 watt crystal-controlled transmitter & a sensitive, tunable superregenerative receiver with RF stage. Built-in 117 VAC power supply. Ideal for CAP, MARS, or USCG Auxiliary communications. Mike included. Less crystal.

Kit HW-29A (6 meter), 9 lbs.... no money dn., $5 mo.....$44.95
Kit HW-30 (2 meter), 9 lbs... no money dn., $5 mo.....$44.95
Kit GP-11, Mobile Power Supply, 6 lbs.....$16.88



HW-29A
$44.95

Heathkit HG-10 VFO . . . For 80 Through 2 Meters

NOW YOU CAN WORK VFO ON ALL BANDS! HG-10 provides 5 v. RMS output to drive DX-60A and most other transmitters. Output is in the 3.5 to 4, 7 to 7.425, & 8 to 9 mc range. Smooth 28-to-1 dial drive. "Spot" switch for off-the-air tuning. Perfect for the new general class ham!

Kit HG-10, 12 lbs... no money dn., $5 mo.....$34.95



HG-10
$34.95

Ham Gear

New Heathkit Solid-State Electronic Keyer

• All solid-state circuitry • Speed range—15 to 60 words per min. Slow-speed option—10 to 20 wpm (furnished) • Solid-state switching—no relays to stick or chatter • Built-in paddle—"feel" is adjustable to your fist during assembly • Adaptable to either right or left handed operators • Convertible to semi-automatic operation • Variable dot-space ratio • Self-completing dashes • Sealed switches on paddle—no exposed contacts to clean or adjust • "Hold" switch for transmitter tuning • Built-in transformer-operated power supply isolates keyer from the power line • Fused for protection



A NEW STRIDE IN ELECTRONICS FOR THE CW MAN! All solid-state circuitry, including transistorized switching circuits, provides keying characteristics that are clean, clear, and electronically stable, both in the control of your transmitter and as your signals are heard on-the-air. Transistorized switching means no relays to clatter . . . no contact bounce to punch holes in characters. The Heathkit Electronic Keyer is engineered to be compatible with virtually all transmitters using negative voltage or bias (grid block) keying. Heath engineers provided the Electronic Keyer with low impedance output switching to keep the voltage dropped within the keyer down to a fraction of a volt of residual transmitter bias, thereby producing no detectable loss in transmitter power. Heath engineers (many of them CW men) made the Electronic Keyer from heavy gauge materials, giving it a "solid" feeling—enough natural weight to remain well "planted" on your desk top even during the hottest contest hours.

DESIGNED FOR VERSATILE USE. The HD-10 Electronic Keyer may be operated with an external paddle or hand key. It features a jack for headphone listening. During "headphone" operation, the receiver output is matrixed with the keyer sidetone for both "transmit" and "receive" listening. The HD-10 also has provisions for external battery power for portable or emergency operation and for 230V. AC, 50-60 cps operation. Based on a circuit designed by W30PO and described in December, 1962 "QST", the Heathkit HD-10 Electronic Keyer is "Ham Radio" through and through. Order your HD-10 today . . . for greater pleasure and satisfaction from operating CW!

Kit HD-10, 6 lbs. . . no money dn., $5 mo. **$39.95**

HD-10 SPECIFICATIONS—Keying: Keying Output: Keyed line to chassis ground. **Voltage polarity:** Negative to ground only. **Maximum open circuit or spike voltage:** 105 volts.

AVAILABLE LATE NOVEMBER



Size of the keyer is comparable to conventional semi-automatic keys as a result of circuit board construction and transistorized circuitry.

Open placement of mechanical components allows easy assembly and adjustment during assembly.

Point-to-point wiring is simple and straightforward . . . interconnects circuit board and two halves of chassis.

Key-closed voltage: 0.2 volts, max. **Key-closed current:** 35 milliamperes, max. **General: Audio:** Internal speaker or high impedance headphone jack. **Transistor complement:** (7) 2N407 PNP; (3) 2N2712 NPN; (1) 2N398A PNP. **Controls:** Off-Operate-Hold switch; Speed control; Dot-To-Space ratio control. **Rear panel connections:** Keyed line; receiver audio; battery +45 volts; battery +22½ volts. External key options: hand key, dash arm, dash, dot. **Power requirements:** AC operation, 105-125 V. AC, 50-60 cps. Battery operation, 45 volts with 22½ V. tap; 14 milliamperes. **Dimensions:** 3¾" W x 4¼" H x 10½" D.

HO-10 Signal Monitor

• Displays envelope, AF & RF trapezoid patterns • Handles power outputs from 5 watts to 1 kilowatt • Simple to connect in antenna system feed line • Shows quality of signals you transmit & receive



MOST WIDELY CHOSEN AMATEUR SCOPE ON THE MARKET! . . . a favorite of amateur radio operators everywhere. The HO-10 provides an accurate method of detecting overmodulation through actual display of your transmitted envelope. Switch the HO-10 to received signals and give "complete" on-the-air signal reports.

Kit HO-10, 13 lbs. . . . No money down, $6 mo. **$59.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

HO-10 SPECIFICATIONS—Vertical response: ±3 db from 10 cps to 500 kc. **Sensitivity:** 500 mv per inch deflection. **Input resistance:** 50 k ohm. **Horizontal response:** ±3 db from 3 cps to 30 kc. **Sensitivity:** 800 mv per inch deflection. **Input resistance:** 1 megohm. **Sweep generator: Recurrent type:** 15 to 200 cps (variable). **Tone oscillators:** Approximately 1000 cps and 1700 cps. **Output voltage:** 15 mv (nominal). **GENERAL: Frequency coverage:** 160 through 6 meters (50-75 ohm coaxial input). **Power limits:** 5 watts to 1 kilowatt output. **Front panel controls:** Function Selector, Sweep Frequency, Tone Generator, Horizontal Gain, Horizontal Position, Vertical Position, Vertical Gain, Focus, Intensity/Off. **Rear control:** Xmtr. Atten. Attenuates 0 to 24 db at approximately 6 db per step. **Power supply:** Transformer operated, fused ½ amp. **Power requirements:** 105-125 VAC, 50/60 cps, 35 watts. **Dimensions:** 5¼" H x 7⅜" W x 11" D.

Heathkit "Ham-Scan" Spectrum Monitor

• Adds "sight" to "sound" when tuning the bands • Operates with all IF frequencies listed below • Monitors up to 50 kc on either side of the signal to which you are tuned



"HAM-SCAN" VISUALLY SHOWS ALL SIGNALS WITHIN YOUR RECEIVER BANDPASS AND UP TO 50 KC ABOVE AND BELOW THE FREQUENCY TO WHICH YOU ARE TUNED. Now you can spot band openings and signals without going through the old "hunt and tune" procedure. The display follows as you tune your receiver.

Kit HO-13, 13 lbs. . . . No money down, $8 mo. **$79.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

HO-13 SPECIFICATIONS—Receiver IF: 455, 1600, 1650, 1681, 2075, 2215, 2445, 3000, 3055, 3395 kc. **RF Amplifier—Response:** ±0.5 db at ±50 kc from receiver IF, **IF**—350 kc. **Sensitivity:** Approx. 50 uv input for 1" vertical deflection at full gain setting. **Horizontal Deflection—Sweep Generator:** Linear sawtooth, recurrent-type (internal). **Frequency:** 10 to 50 cps, variable. **Sweep width:** 30 kc or less, to 100 kc ±20%, continuously variable. (Approx. 15 kc to 100 kc for 455 kc IF). **Resolution:** 2 kc (frequency difference between two 1" pips whose adjacent 3 db points coincide. Measured at slowest sweep speed and at 30 kc sweep width). **Power supply:** Transformer operated, fused at ½ ampere. **Low voltage:** Full wave voltage-doubler circuit provides 250 volts @ 20 ma, & 580 volts @ 6 ma. **High voltage:** Half wave circuit provides—1500 volts @ 1 ma for CRT. **Power requirements:** 120 volts AC, 50/60 cps, 40 watts. **Controls:** On-Off/Intensity, Focus, Horizontal gain, Sweep width, Pip center, Horizontal position, Pip gain, Vertical position, Sweep frequency/AGC, astigmatism. **Dimensions:** 5¼" H x 7⅜" W x 11" D.

World's Largest Selection Of Amateur Radio



Ⓐ Heathkit "Q" Multiplier

CREATES SHARP SELECTIVITY THROUGH AN EFFECTIVE "Q" OF 4000. Ideal for use with the GR-64 SWL Receiver, or similar receivers with IF circuits from 450 to 460 kc. Includes built-in power supply.
Kit HD-11, 3 lbs. **$14.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Ⓑ Heathkit Mobile Speaker

NEAT, COMPACT, TOUGH. Matching speaker for Heathkit equipment. 8 ohm, 4" x 6" oval speaker and gimbal mounting bracket. Green wrinkle finish. Dimensions: 6⅞" W x 4¾" H x 2½" D.
Kit HS-24, 4 lbs. **$7.00**

Ⓒ Heathkit HP-14 Mobile Power Supply For HA-14 "KW Kompact"

PUT A KILOWATT SSB IN YOUR CAR! The HP-14 provides all necessary power for your mobile KW Kompact or similar amplifier: 2300 VDC no load, 2000 VDC @ 500 ma SSB peak; Bias, −130 VDC no load, −110 VDC @ 60 ma. Duty cycle, 50% SSB. Includes relay for remote control of supply & 12 v. filament power. Recommended only with 12 v. alternator equipped, negative ground cars.
Kit HP-14, 10 lbs. . . . no money dn., $9 mo. **$89.95**

Ⓓ Heathkit HP-24 AC Power Supply For HA-14 KW Kompact

HERE'S ALL NECESSARY POWER FOR A FIXED-STATION KW KOMPACT. Provides 2500 VDC no load, 2000 VDC @ 300 ma, 1900 VDC @ 500 ma; Bias, −150 VDC no load, −100 VDC @ 60 ma; Duty cycle, 50% SSB. Filaments, 12.6 VAC @ 4 amperes. Cables included.
Kit HP-24, 22 lbs. . . . no money dn., $5 mo. **$49.95**

Ⓔ Heathkit HP-23 AC Power Supply

PROVIDES ALL NECESSARY POWER FOR FIXED-STATION OPERATION OF THE "SINGLE-BANDERS", THE SB-100, SB-110 AND SIMILAR SSB EQUIPMENT. Output: 700 VDC @ 250 ma ±10%; 300 VDC @ 150 ma ±10% or 250 VDC @ 100 ma ±10%; −100 VDC @ 20 ma and −40 to −80 VDC @ 1 ma, 6.3 VAC @ 11 amps, 12.6 VAC @ 5.5 amps.
Kit HP-23 AC Power Supply, 19 lbs. . . . no money dn., $5 mo. . . . **$39.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Ⓕ Special SSB Microphone For Amateur Radio

HERE'S THE PERFECT COMMUNICATIONS MIKE FOR USE WITH THE SB-400 OR ANY OTHER TRANSMITTER. Special response from 300 to 3,000 cps favors voice frequencies. Features grip-to-talk switch with lock. Hi-Z output. Complete with cables and wiring diagrams.
HDP-21, 4 lbs. . . . no money dn., $5 mo. **$29.40**

Ⓖ Heathkit HP-13 SSB Mobile Power Supply

HP-13 SUPPLIES ALL NECESSARY PLATE & BIAS VOLTAGES FOR "SINGLE-BANDERS", THE SB-100, SB-110, AND SIMILAR SSB EQUIPMENT. Provides: 750 VDC @ 250 ma; 300 or 265 VDC @ 150 ma; −40 to −150 VDC @ 20 ma max.
Kit HP-13 DC Power Supply . . . 7 lbs., no money dn., $6 mo. . . . **$59.95**

Ⓗ Heathkit "Cantenna" Transmitter Dummy Load

MAKE "ON-THE-AIR" TRANSMITTER CHECKS WITHOUT CREATING HARMFUL INTERFERENCE. Heathkit "Cantenna" lets you run up to a full kilowatt with minimal signal radiation. 50 ohm impedance. Provides less than 1.5 V.S.W.R. on frequencies up to 300 mc. Includes provisions for relative power checks. One gallon capacity (oil not included).
Kit HN-31, 3 lbs. **$9.95**

Ⓘ Heathkit HD-19 Hybrid Phone Patch

HANDLE EMERGENCY TRAFFIC FAST! HD-19 transfers audio (even from VOX or PTT controlled transmitters) to 600 ohm telephone lines with separate transmit and receive gain controls to adapt to varying land line conditions.
Kit HD-19, 4 lbs. . . . no money dn., $5 mo. **$29.95**

Ⓙ Heathkit HD-20 100 KC Crystal Calibrator

PROVIDES ACCURATE SIGNALS EVERY 100 KC FROM 100 KC TO OVER 54 MC. Simply connect to receiver's antenna terminals. Uses 9-volt battery. (Not included.)
Kit HD-20, 1 lb. **$14.95**

Ⓚ Heathkit HM-10A Solid-State "Tunnel Dipper"

ONE OF THE HANDIEST INSTRUMENTS A HAM CAN OWN. The modern version of the grid-dip meter. All solid-state tunnel diode oscillator covers 3 to 260 mc, indicating resonance with the circuit under test (coils, antennas, etc.) by a dip in the meter reading. Doubles as an absorption wave meter. Easy to build. Less battery.
Kit HM-10A, 3 lbs. . . . no money dn., $5 mo. **$34.95**

Ⓛ Heathkit Reflected Power Meter

INDICATES SWR AND PERCENT REFLECTED POWER FROM TRANSMITTERS UP TO 1 KW PEAK POWER. HM-11 provides Standing Wave Ratio measurements on amateur bands 160 thru 6 meters. Operates in 50 or 75 ohm transmission lines, and may be left in line at all times.
Kit HM-11, 2 lbs. **$15.95**

Ⓜ Heathkit PM-2 Handy RF Power Meter

GIVES QUICK CHECK-OUT ON HAM, MARINE, COMMERCIAL, OR CB TRANSMITTERS. Indicates transmitter relative power output by sampling RF field near transmitter antenna. Covers 100 kc to 250 mc. without tuning.
Kit PM-2, 2 lbs. **$12.95**

Equipment



HA-14
$99.95

HW-12
$119.95

Heathkit "Single-Bander" SSB Transceivers . . . Choose 80, 40, or 20 Meter Models

• True transceivers for 80, 40, or 20 meter SSB operation• Operate LSB on 80 & 40 meters, USB on 20 meters • 200 watts P.E.P. input–Two 6GE5 RF amplifiers • Crystal filter type SSB generation • ALC, AVC, and S-Meter • Built-in VOX & push-to-talk circuitry • Stable low frequency VFO • 2 kc dial calibration–6" bandspread–vernier tuning.

COMPACT AND VERSATILE. The "Single-Bander" series of transceivers are the ideal rigs for the ham on the move. Here are filter type SSB transceivers with 200 watts P.E.P. and 1 uv sensitivity which are equally effective as fixed or mobile installations. What's more, you can choose your band for lowest cost. And, as you can see in the picture above, they are ideal drivers for the KW Kompact.

COMPARE THE SPECIFICATIONS. They include a deluxe 14-tube heterodyne circuit receiver with 1 uv sensitivity, 2.7 kc selectivity, and slow AVC action to assure superior SSB reception. Provisions are included for plug-in connection of a 100 kc crystal calibrator for accurate band-edge markings. The transmitter portion provides 200 watts peak-envelope-power input for long range communications . . . a highly stable temperature-compensated 1.5-1.8 mc VFO . . . crystal-lattice filter for SSB generation . . . automatic level control to prevent flat-topping . . . built-in PTT and VOX circuits . . . provision for use with a linear amplifier, and much more.

DESIGNED FOR FAST, EASY ASSEMBLY. Average assembly time is only 15 hours. Over 90% of the components mount on a heavy-duty circuit board and the remainder of the circuit is connected with a pre-cut, cabled wiring harness. Alignment is easy with all critical stages pretuned! The only other equipment you need for immediate on-the-air operation is a PTT microphone, antenna, speaker and a power supply (see pg. 34). Choose one of these fine-performing units this Christmas . . . use it for operating "barefoot" or as a driver for the KW Kompact.

Kit HW-12, 80-meter, 15 lbs. . . . No money down, $11 mo. **$119.95**
Kit HW-22, 40-meter, 15 lbs. . . . No money down, $11 mo. **$119.95**
Kit HW-32, 20-meter, 15 lbs. . . . No money down, $11 mo. **$119.95**
GH-12, Push-to-talk and VOX microphone . . . 2 lbs. **$6.95**
Kit HRA-10-1, Plug-in 100 kc crystal calibrator . . . 1 lb. **$8.95**

SPECIFICATIONS—RF input: 200 watts PEP. **Sideband generation:** Crystal lattice bandpass filter method. **Stability:** 200 cps per hour after warm-up. **Carrier & unwanted sideband suppression:** 45 db. **Frequency coverage:** HW-12, 3.8—4.0 mc; HW-22, 7.2—7.3 mc; HW-32, 14.2—14.35 mc. **Receiver sensitivity:** 1 uv for 15 db (S+N): N ratio. **Receiver selectivity:** 2.7 kc @ 6 db, 6.0 kc @ 50 db. **Output:** 50 ohm fixed (unbalanced). **Operation:** HW-12 & HW-22, LSB; HW-32, USB. **Audio output:** 1 watt @ 8 ohms. **Mike input:** Hi-Z. **Panel controls:** Frequency, final tune, function (OFF-PTT-VOX-TUNE), RF gain, AF gain (pull for crystal calibrator), VOX gain, meter. Front panel screw-driver adjust for S-meter and VOX delay. **Rear panel controls:** Mike gain, tune level, final bias. **Tube complement:** Fourteen tube heterodyne circuit; (3) 6EA8's mic. amp., VOX relay amp., IF amp., RF amp., Recvr. mixer; (5) 6AU6's, VFO, VOX amp. IF amps., Xmtr. mixer; (1) 6BE6, VFO isolator (HW-12), Het. osc. and mixer (HW-22 & HW-32); (1) 12BY7 Driver; (1) 12AT7 Xtal. osc., product det.; (1) 6EB8 Audio amp. and output; (2) 6GE5 RF output. **Power requirements:** 800 VDC @ 250 MA peak, 250 VDC @ 100 MA, —130 VDC @ 5 MA, 12 VAC or VDC @ 3.75 amperes. **Cabinet dimensions:** 6¼" H x 12¼" W x 10" D.

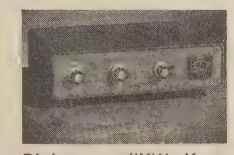
Heathkit "KW Kompact" . . . The World's Smallest Kilowatt SSB Linear Amplifier

• 1000 watts P.E.P. • Tunes 80 through 10 meters • ALC output to exiter • Built-in antenna change-over relay • Built-in SWR meter aids antenna adjustments on the road & monitors for maximum efficiency • Pretuned broad-band input circuit requires no tuning • Engineered with a pair of rugged tubes ideally suited to mobile operation (572-B's or T-160-L's) • Full provision for control of "remotely" located AC or DC power supply.

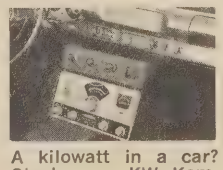
UNDER THE DASH OF YOUR CAR, OR NESTLED ON YOUR DESK TOP—HERE'S THE KILOWATT SSB LINEAR AMPLIFIER THAT SETS NEW STANDARDS IN FEATURES, PRICE, SIZE, AND STYLING. A kilowatt in a car means real sock for mobile and emergency communications, and the KW Kompact's full line of features makes it as versatile as linears many times its size. A panel mounted SWR meter enables on-the-spot antenna checks and adjustments, allowing continuous peak performance over the entire range of tuning. The antenna changeover relay is built-in, and provides "barefoot" operation when the linear is off. Input circuitry is pre-tuned. A pair of 572-B's or T-160-L's (the two types are equivalent) operate in parallel to provide a clean signal with third order products 30 db down or better at the full 1000 watts P.E.P. input. The matching power supplies (HP-14 & HP-24 pg. 34) are completely remote controlled and circuit breaker protected. With the appropriate power supply, the KW Kompact operates fixed or mobile, and can be driven by most SSB transmitters in the 100 watt output range. Use one of the Heathkit "Single Banders" for a driver, and get the best value in a high performance mobile rig.

Kit HA-14, 10 lbs. . . No money down, $10 mo. **$99.95**

HA-14 SPECIFICATIONS—Band coverage: 80, 40, 20, 15, and 10 meters. **Maximum power input:** SSB, 1000 watts P.E.P. **Driving power required:** 100 watts P.E.P. **Duty cycle:** 50% (SSB voice modulation). **Third order distortion:** —30 db or better at 1000 watts P.E.P. **Output impedance:** Fixed 52 ohms unbalanced. SWR not to exceed 2:1. **Input impedance:** 52 ohms unbalanced; broad-band pretuned input circuit. **Meter functions:** 0-6 relative power & 1:1 to 3:1 SWR. **Front panel controls:** Tuning, band switch, relative power sensitivity control, meter switch (FWD & SWR), power switch (off, on). **Tube complement:** Two 572-B (or two T160-L) in parallel. **Power requirements:** 2000 VDC at 500 ma SSB peak, —110 VDC at 60 ma, and 12.6 V. AC or DC at 4 amperes. **Cabinet Size:** 12-3/16" W x 3-3/16" H x 10" D.



Picture a "KW Kompact" on your operating desk. Handsome design, small size. Ideal for portable operation, too!



A kilowatt in a car? Stack your KW Kompact with your transceiver . . . in most cars there's room to spare.



Inside, a neat layout that makes assembly easy . . . quality components for dependable operation.

NO MONEY DOWN UP TO $300

Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

XYL's! Give Him The



SB-100
$360.00

AVAILABLE
EARLY DECEMBER

NEW! The SSB Rig You've Been Waiting For . . . The Heathkit® SB-100 80 Through 10 Meter SSB Transceiver!

• Full five band transceive SSB & CW operation, 80-10 meters • 180 watts P.E.P. SSB–170 watts CW • Switch selectable Upper/Lower sideband/CW operation • Operate PTT & VOX • VOX-operated CW with built-in sidetone • Can operate crystal control in the transmit mode with variable tuning of receiver or can operate crystal-controlled transceive mode–excellent for net control • Separate offset CW carrier crystal for clear, pure CW note • Triple Action Level Control™ • Built-in 100 kc crystal calibrator • Enclosed relays for quiet, trouble free operation • Heath SB-Series LMO (Linear Master Oscillator) provides truly linear tuning with 1 kc dial calibration–less than 100 cps per hour drift after warm-up–400 cps accuracy • Perfect companion for HA-14 KW Kompact or SB-200 final amplifiers • Fixed station operation with HP-23 power supply–mobile with HP-13 & SBA-100-1 mobile mount for quick plug-in/quick disconnect mobile installation • Fast circuit board assembly • Simple alignment–requires only a VTVM with RF probe, a dummy load and a broadcast receiver

THE NEWEST AND THE HOTTEST OF THE SB-SERIES! Here's a complete 80 through 10 meter 180-watt SSB transceiver. It includes all of the high-performance features you've read, heard talked about, or experienced on the already famous Heathkit SB-Series Amateur Radio Equipment . . . plus 5-band coverage with fast, simple bandswitching and tune-up . . . alternate "remote" power supplies for fixed or mobile operation . . . new Heathkit Switch-Board™ coil and bandswitch assembly . . . and a new ALC control circuit (TALC™) that allows even greater variation in speech level. All this and more in the new SB-100!

HERE'S ENGINEERING THAT SETS THE PACE FOR THE INDUSTRY! The Heath SB-Series crystal filter features a 6 pole lattice filter (6 individual crystals) to produce a superior 2 to 1 shape factor for sharper receiver tuning . . . greater sideband suppression. The filter pass-band is symmetrical . . . for identical characteristics on both upper and lower sideband signals . . . and for optimum SSB reception with steep skirts for adjacent signal rejection. What's more, the entire filter assembly is hermetically sealed to retain its published specifications just as they were when "checked out" at the time of production. Compare these specifications with any other SSB filter on the market!

IMPROVED HEATHKIT TECHNIQUES PRODUCE BETTER THAN FACTORY ASSEMBLED RESULTS! The new Heathkit Switch-Boards™ coil and bandswitch assembly virtually eliminates the troublesome point-to-point wiring of tuning circuitry . . . eliminates the critical job of "lead dressing" required in "wired" circuitry. Here the assembly procedure is simplified further by a removable switch shaft which enables easy "stacking" of the individual Switch-Boards. Switch-Board construction is a new step forward in achieving electronically stable circuit construction, plus ready accessibility to tuning coils.

POWER CONSISTENT WITH MAXIMUM VERSATILITY. 180 watts P.E.P. is the best transmitter power level for most hams. This power level permits using the right tubes for the job and does not require eliminating useful features to pay for increased power. The SB-100 produces a "barefoot" signal comparable to the higher power transceivers and is ideally suited for driving a grounded grid linear for a really big signal without the problems of excessive drive.

TALC™ (TRIPLE ACTION LEVEL CONTROL) SETS NEW STANDARDS FOR AUTOMATIC LEVEL CONTROL. Control from three separate circuits is combined in TALC™ to provide greater speech compression . . . allow for even more variation in speech level . . . and boost the performance of the SB-100 still higher.

OPERATING THE SB-100 IS A PLEASURE . . . LIKE DRIVING A FINE AUTOMOBILE! Select the band, dial the frequency, peak-up the preselector, and tune. Receiver and transmitter bandswitching is simultaneous. The preselector control peaks up the driver. Final tuning is quick, sure, and positive. And for CW op's who prefer headphone listening, there is a separate headphone level control to adjust the headphone audio level independently of speaker volume. In addition, the transmitter and receiver are always on the same frequency . . . no "leap-frogging" around the frequency when you're working round tables.

ORDER THE SB-100 FOR THE BEST VALUE IN SSB TRANSCEIVERS . . . REGARDLESS! We invite comparison of the *complete* SB-100 specs below with those of any other make SSB transceiver. Also consider circuit design as related to inherent stability, use of quality components and fine mechanical construction, cost of companion power supplies and linear amplifiers, band coverage in view of increasing 10 and 15 meter activity, ease of circuit familiarization with regard to possible maintenance, and resale value. You will agree that the SB-100 is the best investment you can make in amateur radio equipment. (Recommended for hams with previous electronic or kit construction experience.)

Kit SB-100, 23 lbs., $36 dn., $31 mo. **$360.00**
SBA-100-1, Mobile Mounting Kit, 6 lbs. **$14.95**
GH-12, Mobile PTT Mike, 2 lbs. **$6.95**
HDP-21, Communications Microphone, 4 lbs. . . .
no money dn., $5 mo. **$29.40**
Kit HP-13, DC Power Supply, 7 lbs. (specifications pg. 34). . .
no money dn., $6 mo. **$59.95**
Kit HP-23, AC Power Supply, 19 lbs. (specifications pg. 34). . .
no money dn., $5 mo. **$39.95**

SB-100 SPECIFICATIONS—Receiver section: Sensitivity: Less than 1 microvolt for 15 db signal plus noise-to-noise ratio for SSB operation. **SSB selectivity:** 2.1 kc minimum at 6 db down, 5 kc maximum at 60 db down—2:1 nominal shape factor—6:60 db. **Input impedance:** Low impedance for unbalanced coaxial input. **Output impedance:** Unbalanced 8 and 600 ohm speaker, and high impedance headphone. **Power output:** 2 watts with less than 10% distortion. **Spurious response:** Image and IF rejection better than 50 db. Internal spurious signals below equivalent antenna input of 1 microvolt. **Transmitter section: DC power input: SSB:** 180 watts P.E.P. continuous voice. **CW:** 170 watts—50% duty cycle. **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm nonreactive load). **Output impedance:** 50 ohms to 75 ohms with less than 2:1 SWR. **Oscillator feedthrough or mixer products:** 55 db below rated output. **Harmonic radiation:** 35 db below rated output. **Transmit-receive operation: SSB:** Push-to-talk or VOX. **CW:** Provided by operating VOX from a keyed tone, using grid-block keying. **CW side-tone:** Internally switched to speaker in CW mode. Approx. 1000 cps tone. **Microphone input impedance:** High impedance. **Carrier suppression:** 50 db down from single-tone output. **Unwanted sideband suppression:** 55 db down from single-tone output at 1000 cps reference. **Third order distortion:** 30 db down from two-tone output. **Noise level:** At least 40 db below single-tone carrier. **RF compression (TALC™):** 10 db or greater at .1 ma final grid current. **General: Frequency coverage:** 3.5 to 4.0; 7.0 to 7.5; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megacycles). **Frequency stability:** Less than 100 cps per hour after 20 minutes warmup from normal ambient conditions. Less than 100 cps for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial accuracy—"resettability":** Within 200 cps on all bands. **Electrical dial accuracy:** Within 400 cps after calibration at nearest 100 kc point. **Dial mechanism backlash:** Less than 50 cps. **Calibration:** 100 kc crystal. **Audio frequency response:** 350 to 2450 cps ±3 db. **Phone patch impedance:** 8 ohm or 600 ohm receiver output to phone patch; high impedance phone patch input to transmitter. **Front panel controls:** Main (LMO) tuning dial; Driver tuning and Preselector; Final tuning; Final loading; Mic and CW Level Control; Mode switch; Band switch; Function switch; OSC Mode switch; Meter switch; RF Gain control; Audio Gain control. **Internal controls:** VOX Sensitivity; VOX Delay; **Anti-VOX;** Carrier Null (control and capacitor); Meter Zero control; CW Side-Tone Gain control; Relative Power Meter Adjust control; P.A.—Bias; Phone Vol (headphone volume); Neutralizing. **Rear Apron connections:** CW Key jack; 8 ohm output; 600 ohm output; Phone patch input; ALC input; Power and accessory plug; RF output; Antenna switch; Receiver Antenna. **Power requirements:** 700 to 800 volts at 250 ma; 300 volts at 150 ma; —110 volts at 10 ma; 12 volts at 4.76 amps. **Cabinet dimensions:** 14⅞" W x 6⅝" H x 13⅜" D.

...finest... Heathkit® SB-Series



The Heathkit SB-110 6-Meter SSB Transceiver

• Full SSB-CW transceive operation on six meters • 180 watts PEP SSB—150 watts CW • Switch select for Upper Sideband / Lower Sideband / CW operation • Separate offset CW carrier crystal for clear, pure, CW note • ALC & ANL • Built-in 100 kc calibrator & antenna switching • Covers 50-52 mc with crystals supplied – total coverage 49.5-54 mc • Crystal filter SSB generator • Fixed station or mobile operation with the Heathkit HP-23 or HP-13 power supplies and SBA-100-1 mobile mount

NOW YOU CAN PUT A TRULY HIGH PERFORMANCE SSB RIG ON 6 METERS . . . assemble the new Heathkit SB-110! It provides full 6 meter transceiver operation with the same selectivity, stability, calibration, performance, and value already made famous by the Heathkit SB Series equipment for operation on 80-10 meters. Enjoy operating features that cannot be found in any other comparable transceiver on the market today! Discover the satisfaction of having a 6 meter signal with the real punch of SSB . . . of completing "solid copy" QSO'S when band openings are minimal . . . of extending ground wave coverage . . . of owning and operating a high performance 6 meter rig you have assembled yourself.

DISCOVER THE NEW "FEELING" OF TUNING 6 METERS WITH THE FAMOUS HEATHKIT SB SERIES LMO. That feeling is from the smooth dial mechanism and oscillator stability solid enough to satisfy the rigorous requirements of both CW and SSB operation; plus, truly linear 1 kc dial calibration. The Heath LMO on 6 meters means a maximum drift of less than 100 cps per hour after a 20-minute warmup time; it means dial readings accurate within 400 cps after calibration. Let these performance figures and the specifications below be your guide to choosing the best 6-meter rig available today! Recommended for experienced kit builders.

Kit SB-110, 23 lbs. . . . $32 dn., $27 mo. **$320.00**



Sectionalized layout on circuit boards simplifies construction—makes components accessible and easy to locate.

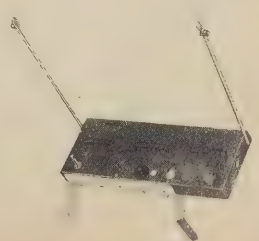
SB-110 SPECIFICATIONS—RECEIVER SECTION: Sensitivity: 0.1 uv for 10 db signal plus noise-to-noise ratio. **Selectivity:** 2.1 kc @ 6 db down, 5 kc max @ 60 db down. **Image rejection:** 50 db or better. **IF rejection:** 50 db or better. **Antenna input impedance:** 50 ohm nominal (unbalanced). **Audio output impedance:** Speaker, 8 ohms. Headphones, 600 ohms or higher. **Audio output power:** 1 watt. **AGC characteristics:** Audio output level varies less than 12 db for 50 db change of input signal level (0.5 uv to 150 uv). **TRANSMITTER SECTION: DC power input:** SSB, 180 watts PEP; CW, 150 watts. **RF power output:** SSB, 100 watts PEP. CW, 90 watts (50 ohm non-reactive load). **Output impedance:** 50 ohm nominal with not more than 2:1 SWR. **Carrier suppression:** 55 db down from rated output. **Unwanted sideband suppression:** 55 db down from rated output @ 1000 cps & higher. **Distortion products:** 30 db down from rated PEP output. **Hum & noise:** 40 db or better below rated carrier. **Audio input:** .010 v. minimum for rated output. **CW sidetone:** Internally switched to speaker with transmitter in CW mode & key depressed. Approx. 800 cps tone. **Keying characteristics:** VOX operated from keyed tone using grid-block keying. **GENERAL: Frequency coverage:** 49.5 to 54.0 mc in 500 kc segments (50.0 to 52.0 mc with crystals supplied). **Frequency selection:** Built-in LMO or crystal control. **Frequency stability:** Less than 100 cps drift per hour after 20 minutes warmup under normal ambient conditions. Less than 100 cps drift for ±10% supply voltage variations. **Modes of operation:** SSB, single sideband (suppressed carrier, with selectable upper or lower sideband). Tune, continuous wave. CW, keyed continuous wave (800 cps offset crystal for cross-mode operation between USB and CW). **Dial Accuracy:** Electrical, within 400 cps on all band segments, after calibration at nearest 100 kc point. Visual, within 200 cps. **Dial backlash:** No more than 50 cps. **Calibration:** Every 100 kc. **Intermediate frequencies:** Receiver First IF & Transmitter Second IF, 8.395 to 8.895 mc passband. Receiver Second IF & Transmitter First IF, 3.395 mc center frequency. **Power requirements:** High voltage, +700 v. DC @ 250 ma with 1% max. ripple. Low voltage, +250 v. DC @ 100 ma with .05% max. ripple. Bias voltage, —115 v. DC @ 10 ma with .5% max. ripple. Filament voltage, 12.6 v. AC/DC @ 4.355 amps. **Dimensions:** 14⅞" W x 6⅝" H x 13⅜" D.

Universal Mobile Mounting Bracket For SB-100 & SB-110

GO MOBILE WITH THE SB-110 OR SB-100! The SBA-100-1 permits easy installation of either transceiver on the transmission hump or under the dash. Heath-Engineered cantilever suspension provides firm support . . . allows quick plug-in of entire transceiver in your car for easy change from fixed to mobile operation. Supporting rods are concealed behind the mounting base when the transceiver is not installed. Finish matches SB series.

Kit SBA-100-1, 6 lbs. **$14.95**

SBA-100-1
$14.95



World's Best Values In SSB Ham Gear



Heathkit SB-300 Amateur Band Receiver . . . The Specifications Speak For Themselves!

• Complete coverage of 80 through 10 meter amateur bands with all crystals furnished, plus provision for VHF converters • Crystal-controlled front-end for same rate tuning on all bands • 1 kc dial calibrations—100 kc per dial revolution • Bandspread equal to 10 feet per megacycle • Tuning dial to knob ratio approx. 4-to-1 • Provision for transceive operation with matching SB-400 Transmitter • Professional styling & features at 60% savings

Kit SB-300, less speaker, 23 lbs...No money down, $23 mo.....**$250.00**
SBA-300-1 Optional AM crystal filter (3.75 kc), 1 lb.....**$19.95**
SBA-300-2 Optional CW crystal filter (400 cps), 1 lb.....**$19.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

SB-300 SPECIFICATIONS — Frequency range (megacycles): 3.5 to 4.0, 7.0 to 7.5, 14.0 to 14.5, 21.0 to 21.5, 28.0 to 28.5, 28.5 to 29.0, 29.0 to 29.5, 29.5 to 30, **Intermediate frequency:** 3.395 megacycles. **Frequency stability:** Less than 100 cps per hour after 20 min. warmup under normal ambient conditions. Less than 100 cps for ±10% line voltage variation. **Visual dial accuracy:** Within 200 cps on all bands. **Electric dial accuracy:** Within 400 cps on all bands after calibration at nearest 100 kc point. **Backlash:** No more than 50 cps. **Sensitivity:** Less than 1 microvolt for 15 db signal plus noise-to-noise ratio for SSB operation. **Modes of operation:** Switch selected; LSB, USB, CW, AM. **Selectivity:** SSB: 2.1 kc at 6 db down, 5.0 kc at 60 db down (crystal filter supplied). AM: 3.75 kc at 6 db down, 10 kc at 60 db down (crystal filter available as accessory). CW: 400 cps at 6 db down, 2.5 kc at 60 db down (crystal filter available as accessory). **Spurious response:** Image and IF rejection better than 50 db. Internal spurious signals below equivalent antenna input of 1 microvolt. **Audio response:** SSB: 350 to 2450 cps nominal at 6 db. AM: 200 to 3500 cps nominal at 6 db. CW: 800 to 1200 cps nominal at 6 db. **Audio output impedance:** Unbalanced nominal 8 ohm speaker. and high impedance headphone. **Audio output power:** 1 watt with less than 8% distortion. **Antenna input impedance:** 50 ohms nominal. **Muting:** Open external ground at Mute socket. **Crystal calibrator:** 100 kc crystal. **Front panel controls:** Main tuning dial; function switch; mode switch; AGC switch; band switch; AF gain control. RF gain control; preselector; phone jack. **Rear apron connections:** Accessory power plug; HF antenna; VHF #1 antenna; VHF #2 antenna; mute; spare; anti-trip; 500 ohm; 8 ohm speaker; line cord socket; heterodyne oscillator output; LMO output; BFO output; VHF converter switch. **Tube complement:** (1) 6BZ6 RF amplifier; (1) 6AU6 Heterodyne mixer; (1) 6AB4 Heterodyne oscillator; (1) 6AU6 LMO osc.; (1) 6AU6 LMO mixer; (2) 6BA6 IF amplifier; (1) 6AU6 Crystal calibrator; (1) 6HF8 1st audio, audio output; (1) 6AS11 Product Detector, BFO, BFO Amplifier. **Power supply:** Transformer operated with silicon diode rectifiers. **Power requirements:** 120 volts AC, 50/60 cps, 50 watts. **Dimensions:** 14⅞" W x 6⅝" H x 13⅜" D. **Net weight:** 17 lbs.

Heathkit SB-400 SSB Transmitter

• A complete 180 watt SSB transmitter with built-in power supply and antenna changeover relay • Crystal filter type SSB generation • Operates upper or lower sideband • Automatic level control • VOX & PTT • Complete 80-10 meter coverage • Crystal controlled heterodyne oscillators • 1 kc linear dial calibration—100 kc per dial revolution • Dial bandspread equal to 10 feet per megacycle

THE PERFECT "MATE" TO THE SB-300. The Heathkit SB-400 supports the same rigid specifications set by the SB-300. An identical LMO controls the stability and tuning rate of the SB-400 . . . it means you get the same outstanding characteristics . . . it means the SB-300 and SB-400 are completely compatible, allowing full transceive operation when they are "mated."

A HUSKY TRANSMITTER THAT WILL PROVIDE YEARS OF TOP PERFORMANCE. The SB-400 features complete shielding and isolation of circuits for high stability and maximum TVI protection . . . a built-in heavy-duty power supply (a feature not found in many more expensive comparable transmitters) . . . a heavy-gauge aluminum chassis provides extra strength without excessive weight.

ORDER YOUR SB-400 TODAY. It belongs in your ham shack.

Kit SB-400, 34 lbs. . . .
$33 dn., $28 mo.....**$325.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

HDP-21 (Special SSB "Ham" Microphone—see pg. 34 for details) . . . 4 lbs.
No money dn., $5 mo.....**$29.40**

SB-400 SPECIFICATIONS—Emission: SSB (upper or lower sideband) and CW. **Power input:** 170 watts CW, 180 watts P.E.P. SSB. **Power output:** 100 watts (80-15 meters), 80 watts (10 meters). **Output impedance:** 50 to 75 ohm—less than 2:1 SWR. **Frequency range:** (mc) 3.5—4.0; 7.0—7.5; 14.0—14.5; 21.0—21.5; 28.0—28.5; 28.5—29.0; 29.0—29.5; 29.5—30.0. **Frequency stability:** Less than 100 cps per hr. after 20 min. warmup. **Carrier suppression:** 55 db below peak output. **Unwanted sideband suppression:** 55db @ 1 kc. **Intermodulation distortion:** 30 db below peak output (two-tone test). **Keying characteristics:** Break-in CW provided by operating VOX from a keyed tone (Grid block keying). **CW sidetone:** 1000 cps. **ALC characteristics:** 10 db or greater @ 0.2 ma final grid current. **Noise level:** 40 db below rated carrier. **Visual dial accuracy:** Within 200 cps (all bands). **Electrical dial accuracy:** Within 400 cps after calibration at nearest 100 kc point (all bands). **Backlash:** Less than 50 cps. **Oscillator feedthrough or mixer products:** 55 db below rated output (except 3910 kc crossover which is 45 db). **Harmonic radiation:** 35 db below rated output. **Audio input:** High impedance microphone or phone patch. **Audio frequency response:** 350-2450 cps ±3 db. **Power requirements:** 80 watts STBY, 260 watts key down @ 120 V AC line. **Dimensions:** 14⅞" W x 6⅝" H x 13⅜" D.

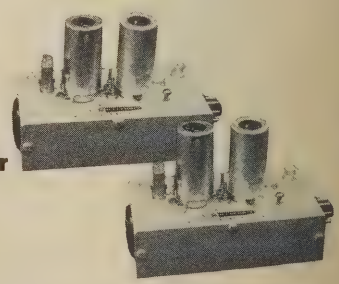
Heathkit SB-200 Kilowatt Linear Amplifier

• A complete SSB kilowatt linear amplifier matching the SB-400 & SB-100 • 1200 watts P.E.P. input SSB—1000 watts CW • 80 through 10 meter coverage • Built-in SWR meter—Antenna relay—Built-in solid-state power supply • Automatic level control • Circuit-breaker power supply protection • Variable output loading • Fan cooling

HERE'S THE DESK-TOP KW SSB FINAL TO COMPLETE YOUR 80-10 METER SB-SERIES STATION. . . features two 572B or T-160-L final amplifier tubes and an internal power supply. The pi-network output tank loads up well to nearly every antenna system.

Kit SB-200, 41 lbs. . . .
No money dn., $19 mo.....**$200.00**

SB-200 SPECIFICATIONS—Band coverage: 80, 40, 20, 15 & 10 meters. **Maximum power input:** 1200 watts P.E.P. SSB, 1000 watts CW. **Driving power required:** 100 watts. **Duty cycle:** SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). **Third order distortion:** 30 db or better at 1000 watts P.E.P. **Output impedance:** 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. **Input impedance:** 52 ohm unbalanced; broad-band pretuned input circuit requires no tuning. **Meter functions:** 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. **Front panel controls:** Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. **Tube complement:** Two 572B/T-160-L (in parallel). **Power requirements:** 120 volts AC @ 16 amperes (max.), 240 volts AC @ 8 amperes (max.). **Cabinet size:** 14⅞" W x 6⅝" H x 13⅜" D. **Net weight:** 35 lbs.



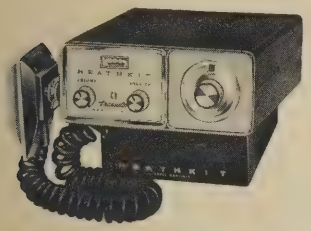
6 & 2 Meter Converters For The SB-300

GET HIGH PERFORMANCE RECEPTION ON 6 & 2 METERS! 6 meter model extends coverage to 48-54 mc (50-52 mc crystal supplied). 2 meter model extends coverage to 142-150 mc (144-146 mc crystal supplied). High sensitivity . . . signal plus noise-to-noise ratios of 6 db for 0.1 uv signals on 6 and for 0.2 uv signals on 2!
SBA-300-3 (6 meter), 2 lbs.....**$19.95**
SBA-300-4 (2 meter), 2 lbs.....**$19.95**

All-Transistor 23-Channel 5-Watt CB

4 MONEY-SAVING REASONS FOR YOU TO BUY HEATHKIT® CB!

1. New Lower Price On All Units!
2. 5% Discount On two 5-Watt Unit Buy!
3. New Lowest Cost All-Transistor 5-Watt Transceiver . . . Kit Or Wired!
4. Lowest Crystal Prices . . . Only $1.99 Each with order of 1 or more transceivers!



OPERATES "FIXED . . . with accessory AC power supply . . . GWA-14-1. AC power switching is accomplished through the ON-OFF-VOLUME control on the "Transceiver" front panel. The GWA-14-1 is a desk-top base for the "Transceiver" and provides all necessary power . . . requires only one plug-in connection.

Kit GWA-14-1, AC Power Supply, 5 lbs. **$14.95**



Kit GW-14 **$89.95**

Assembled GWW-14 **$124.95**

COMPLETE 23-CHANNEL CB CRYSTAL PACKAGE . . . . . $79.95!

A regular $135.70 value! Includes transmit & receive crystals for all CB channels for complete GW-14 operating capability . . . a total of 46 crystals. For maximum versatility, this package is your best dollar buy! **GWA-14-2,** 1 lb. no money dn., $8 mo. **$79.95**

Your Best Buy In CB . . . The New Heathkit GW-14 Makes All Other Transistor Rigs Seem Overpriced!

• 14 transistor, 6 diode circuitry • Provision for 23 crystal-controlled transmit & receive channels • Full 5 watt performance • Only 2⅞" H x 7" W x 10½" D . . . ideal for car, boat, any mobile installation • Front panel "S" meter • Adjustable squelch control • Automatic noise limiter • Built-in PM speaker • ½ uv sensitivity for 10 db signal plus noise to noise ratio • Circuit board construction • Gimbal mounting bracket • Attractive Turner Ceramic PTT Mike • Die-cast, chrome-plated front panel with rust-resistant aluminum charcoal gray cabinet.

ALL-CHANNEL, ALL-TRANSISTOR! Just flip the channel selector to any desired channel and you're ready for instant 2-way communications. The efficient twin "pi" network output assures a *minimum* of 3 watts RF output from the 5-watt circuit . . . assures you of dependable all-channel communications over maximum distance. The GW-14 is all transistorized . . . no component deterioration to let you down, as with tube types. It runs cool, and collected . . . draws only 0.75 amps during "transmit", only 0.12 amps on "receive". Your GW-14 will give you new standards in CB performance.

EASY TO BUILD . . . EASY TO OPERATE. All parts mount on a single circuit board, and assembly is completed in a few evenings. Tune-up is easy, requiring only another CB unit. Operation is push-to-talk. The improved adjustable squelch control eliminates all speaker hiss during standby. Illuminated channel selector and "S" meter enable convenient nighttime operation.

INCLUDES MICROPHONE & POWER CABLES . . . and crystals for one channel (specify channel no.). For 12 v., negative ground only, (for 117 VAC operation order GWA-14-1 power supply below); FCC license required. Use must comply with Part 95 of FCC Regulations.

Kit GW-14, 8 lbs., no money dn., $9 mo. **$89.95**
Assembled GWW-14, 9 lbs., no money dn., $12 mo. **$124.95**
Kit GWA-14-1, AC Power Supply, 5 lbs. **$14.95**

GW-14 SPECIFICATIONS—RECEIVER SECTION: General description: 6-transistor superheterodyne circuit with RF amplifier, squelch, noise limiter, 23-channel crystal controlled tuning with tuning and relative signal strength indicator. **Intermediate frequency:** 455 kc. **Sensitivity:** ½ uv or less for a 10 db signal plus noise to noise ratio. **Selectivity:** Adjacent channel attenuation is down 30 db. **Audio power output:** 3 watts minimum. **TRANSMITTER SECTION: Nominal power input to final RF amplifier:** 5 watts. **Frequency control:** 3rd overtone quartz crystal as selected by the 23-position channel selector switch. **Frequency control effectiveness:** Operating frequency will be within .005% of nominal crystal frequency over an ambient temperature range of —20 to +130 degrees F. **Modulation:** High level AM limited to less than 100%. **Output impedance:** 50 ohms nominal. **Output circuit:** Twin "PI" matching network. **Power output:** 3 watts minimum into 50 ohms load. **GENERAL—Controls:** Squelch; off/on volume; channel selector. **Tuning meter:** For receiving, S-9 corresponds to approximately 100 uv signal input. For transmitting, the meter indicates the presence of power output and modulation peak. **Power requirements:** Positive 12 volt system (13.4 volts); receiver current drain, standby—120 ma.; transmitter current drain—750 ma. **Dimensions:** 2-13/16" H x 7" W x 10-7/16" D.

Ⓐ Best Buy Long Range 1 Watt Walkie-Talkie

• Efficient 10-transistor, 2-diode circuit for dependable, trouble-free performance • Up to 3-mile inter-unit communications • Crystal-controlled transmit & receive • Adjustable squelch control & automatic noise limiter • $20 rechargable battery included • Built-in 117 v. AC battery charger • Sturdy, rustproof all-metal case • Simple to build & operate • Complete with power cords, strap, crystals (specify channel) • FCC license required

Kit GW-52A, 4 lbs. . . . no money dn., $7 mo. **$69.95**
Kit GW-52-2, (pair), 8 lbs. . . . no money dn., $12 mo. **$129.95**

Ⓑ Deluxe 9-Transistor Walkie-Talkie

• Range up to one mile between units • Crystal-controlled transmitter & superheterodyne receiver • Built-in squelch & automatic noise limiter • No license required when operated according to FCC Reg. Part 15 • Includes earphone, strap, crystals (specify channel) • Less battery

Kit GW-21A, 3 lbs. . . . no money down, $5 mo. **$39.95**
Kit GW-21-2 (pair) 6 lbs. . . . no money down, $8 mo. **$74.95**
GWA-30, Battery Set (2), 1 lb. **$2.95**

Ⓒ Compact 4-Transistor Walkie-Talkie . . . Ideal for Sports Use

• Range ¼ mile or more between units • Crystal-controlled transmitter—superregen. receiver • Fits in pocket or purse • No license required when operated according to FCC Reg. Part 15 • Includes crystal (specify channel) • Less battery

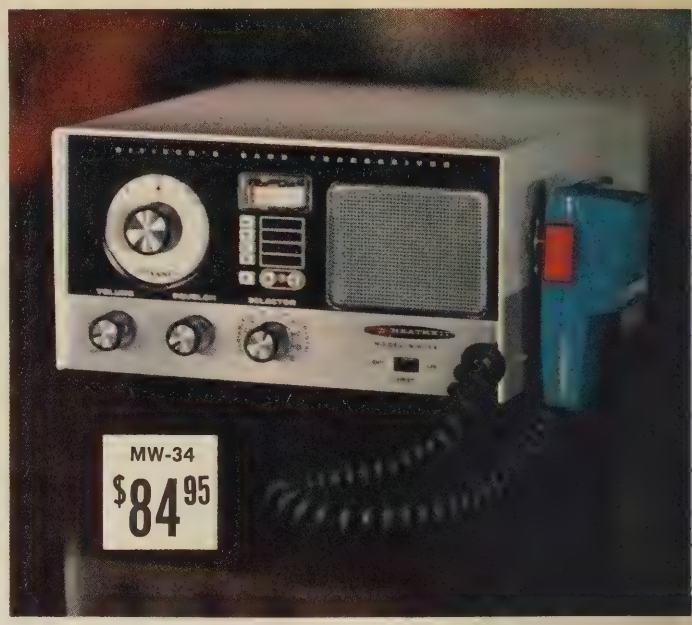
Kit GW-31A, 2 lbs. **$19.95**
Kit GW-31-2 (pair), 4 lbs. . . . no money dn., $5 mo. **$35.00**
GWA-30, Battery Set (2), 1 lb. **$2.95**



Order 2 Or More 5-Watt CB Transceivers & Save 5%!

Deluxe 5-Channel "Fixed Or Mobile" CB Transceiver—MW-34

• Front panel crystal socket—allows quick, convenient changing of one transmit crystal without removing cabinet • Spotting switch—generates a signal to tune receiver to exact frequency of changeable transmit channel • TVI filter—minimizes interference with TV sets • Calibrated "S" meter • 5 crystal-controlled transmit & receive channels • 3-way power supply—6 or 12 v. DC, 117 v. AC • Superhet receiver with RF stage for high performance • Styled in handsome Heathkit marine motif • Easy to build • Complements Heath marine radiotelephones as alternative means of communication in many boating areas



IDEAL FOR BOAT, CAR, & HOME! With its compact size, 3-way power supply (117 VAC, 6 or 12 VDC) and mounting bracket, the MW-34 installs virtually anywhere you wish to set up CB communications.

SIMPLE TO BUILD! New 2-color, step-by-step instructions speed assembly. Includes PTT mike, AC & DC power cords, crystals for 1 channel (specify), FCC license pack. Use must comply with Part 95 FCC regulations.

Kit MW-34, 18 lbs...no money dn., $9 mo...Was $89.95.....Now **$84.95**

MW-34 GENERAL DESCRIPTION: RECEIVER: 5-tube superheterodyne circuit with RF stage, squelch & automatic noise limiter. **Variable receiver tuning:** Any one of 23 Citizen's Band channels selected by front panel variable tuning dial (frequencies 26.965 to 27.255 mc). **Crystal-controlled receiver tuning:** Any five of 23 Citizen's Band channels determined by particular crystals installed in unit. **Sensitivity:** ½ uv for 10 db signal-to-noise ratio. **Selectivity:** 5 kc @ 6 db down from peak response. **Input impedance:** 50 to 70 ohm. **TRANSMITTER SECTION: Nominal power input to final RF amplifier:** 5 watts. **Output impedance:** 50 to 70 ohm. **GENERAL SPECIFICATIONS—Meter:** For receiving, S9 scale indication corresponds to approximately 30 microvolts signal input. **Power requirements:** 105-125 volts, 50/60 cps, AC 72 watts. 12 volts DC, 4.5 amperes; 6 volts DC, amperes. **Dimensions: Overall;** 4⅝" H x 8⅜" W x 11" D.



GW-42
$99.95

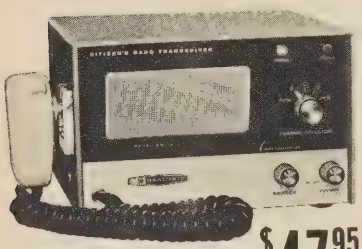
• 5 crystal-controlled transmit & receive channels • Built-in 4 tone selective call circuitry • All-channel receiver tuning • Tuning meter • Built-in 3-way power supply • Adjustable squelch • Switchable automatic noise limiter • Easy to build

Deluxe 5-Channel "Master Station" Fixed Or Mobile CB Transceiver

ATTRACTIVE STYLING, YET RUGGED & READY TO GO ANYWHERE! Car, truck, barn, office, or home . . . anywhere you need complete command of a 2-way CB radio setup. Shorten the time and distance required for efficient farm, business, or personal communications. Includes PTT microphone, AC & DC power cables, FCC license pack, and crystals for 1 channel (specify). Use must comply with Part 95 FCC regulations.

Kit GW-42, 23 lbs...no money dn., $10 mo...Was $119.95.....Now **$99.95**

GW-42 GENERAL DESCRIPTION—RECEIVER SECTION: 6 tube superheterodyne circuit with RF amplifier, squelch, noise limiter. **Intermediate frequency:** 455 kilocycles. **Sensitivity:** ½ microvolt or less for a 10 db signal to noise ratio. **Selectivity:** 40 db attenuation of adjacent channel. **TRANSMITTER SECTION: Nominal power input to final RF amplifier:** 5 watts. **Frequency control:** 3rd overtone crystal as selected by 5-position switch. **Modulation:** AM plate modulation, automatically limited to less than 100%. **Output impedance:** 50-70 ohm. **TONE SQUELCH SECTION: Frequency control:** Resonant reed relay; with reeds used for generation of calling tone and frequency selection during monitoring. **Power requirements:** AC at 105-125 volts, 60 cycles, 70 watts; 6 VDC at 9 amps; 12 VDC at 5 amps. **Dimensions:** 5⅞" H x 17½" W 10½" D.



GW-22A
$47.95

Heathkit 5-Channel CB Transceiver

• 5-crystal-controlled transmit & receive channels • Superhet receiver with RF stage • Built-in squelch & automatic noise limiter • Push-to-talk microphone • Easy to build

FOR THE ULTIMATE IN VERSATILITY AT LOWEST COST . . . all models include full 5 channel capability, PTT mike, power cable, & crystals for 1 channel (specify). Use must comply with Part 95 FCC regulations.

Kit GW-22A (117 v. AC), 13 lbs. . . . No money down, $5 mo. was $59.95 .....now **$47.95**
Kit GW-22D (6 or 12 v. DC), 13 lbs. . . . No money down, $5 mo. was $64.95 .....now **$49.95**
Kit GW-32A with Selective Call (117 v. AC), 14 lbs., No money down, $7 mo. . . . was $84.95 .....now **$69.95**
Kit GW-32D with Selective Call (6 or 12 v. DC), 14 lbs., No money down, $8 mo. . . . was $89.95.....now **$74.95**



GW-12A
$34.95

Low-Cost "One-Channel" CB Transceiver

• Crystal-controlled transmit & receive channel • Built-in squelch & automatic noise limiter • Superheterodyne receiver • Ideal for fixed or mobile use • Clean, open circuit layout for quick, easy assembly • Includes cabinet, PTT mike, & crystals (1 channel—specify) • Use must comply with Part 95 FCC regulations

Kit GW-12A (AC only), 10 lbs. . . . no money dn., $5 mo. Was $39.95.....Now **$34.95**
Kit GW-12D (AC & DC), 13 lbs. . . . no money dn., $5 mo. Was $44.95.....Now **$39.95**

Choose A Heathgift From These Special CB Accessory Values

Ⓐ **Hy-Gain Roof Top Mobile CB Antenna.** The famous Shorty "Roof-Topper". Overall height 22". **GDP-245,** 2 lbs.....**$15.50**

Ⓑ **Hy-Gain AM/CB Mobile CB Antenna.** Telescoping "Duo-Topper". 28" min.—50" extended. Includes coax, coax connector, rf coupler, & AM radio plug . . . all preassembled. **GDP-255,** 2 lbs.....**$14.95**

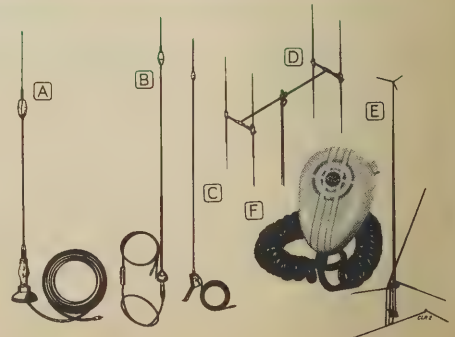
Ⓒ **Hy-Gain Trunk Mount Mobile CB Antenna.** "Jiffy-Topper". Overall height 50". Includes 16' of coax cable plus connector. **GDP-265,** 2 lbs.....**$13.95**

Ⓓ **Hy-Gain Dual Beam CB Base Antenna.** Duo-Beam 4 model 114DB. 42 watts effective radiated power from a 5-watt rig with this roof-top vertical-element antenna! **GDP-275,** 16 lbs....no money dn., $5 mo...**$39.95**

Ⓔ **Colinear CB Base Antenna.** Ground plane type antenna. Overall height of radiator . . . 19'10"—length of radials . . . 9'. Provides the most efficient omni-directional base station antenna. **GDP-285,** 8 lbs....no money dn., $5 mo....**$29.95**

Ⓕ **PTT Microphone.** Push-to-talk mike with tailored audio response. Complete with cable. Less plug. **GH-12,** 2 lbs.....**$6.95**

Coax Cable. (not illus.) GDP-295, 50 ft., 2 lbs. **$3.75** and GDP-305, 100 ft., 4 lbs. **$5.50.** RG-58U 52 ohm cable. Each kit contains 2 coax plugs & 1 phono plug plus instructions.



CB CRYSTALS $1.99 EACH WITH ANY TRANSCEIVER ORDER

Heathgift® Marine Electronics



MI-11A
$69.95

MIA-11
$8.95

Spot Channels, Shoals, Or Schools Of Fish With The Heathkit Depth Sounder

•Accurately readable–to 1 foot divisions with 5% accuracy • Reaches down to 200 feet on hard bottoms • Sensitive all-transistor circuit–instant operation, reliable performance • Self-contained or boat battery powered for added convenience • Simple, stable circuit board construction • External power connection & switch on rear panel for easy access

STOP WORRYING . . . KNOW THE DEPTH! Avoid the embarrassment of running aground . . . or worse yet, the cost of repairing a damaged prop, shaft, or strut. Protect your boat from uncharted hazards, especially when navigating unknown waters. With the Heathkit Depth Sounder you *know* the depth of the water.

COMPARE WITH MORE COSTLY UNITS! An all-transistor circuit puts your MI-11A in operation instantly . . . keeps it operating faithfully, accurately –within 5% of all readings! And then there's the attractive rustproof metal cabinet with gray, white, black & blue color styling, and gimbal mounting bracket for installation virtually anywhere.

2-WAY POWER SUPPLY OFFERS VERSATILITY, PORTABILITY! An internal-external battery switch permits convenient selection of self-contained or boat battery operation (uses 9 standard "C" flashlight batteries–not included). Also includes a waterproof transducer.

ASSEMBLES IN JUST 4 TO 6 HOURS! Fast, stable fiberglass circuit board construction . . . requires no special skills or knowledge.

Kit MI-11A, 8 lbs...no money dn., $7 mo.....**$69.95**
Model MIA-11, Accessory transducer mount, 2 lbs.....**$8.95**

MI-11A SPECIFICATIONS—Dial: 0-200 feet in one foot divisions. **Range:** 0-200 feet on hard bottoms, 0-100 feet on soft bottoms. **Frequency:** 200 kc. **Sounding rate:** 1440 soundings per minute, or 24 per second. **Accuracy:** Within 5% of actual depth. **Depth indication:** Neon lamp flashing at 0 feet and again at indicated depth. **Transducer:** Barium titanate ceramic element encased in a waterproof housing with solid brass fittings; attached 15 foot length of 2 conductor shielded cable. May be mounted permanently to the hull or temporarily with a transom mount. **Controls:** Combined ON/OFF-Sensitivity. **Power supply:** 13.5 volts from nine self-contained size C flashlight cells, or external 12 volt battery. Flashlight cells are contained in three leakproof plastic housings. **Battery drain:** 100 milliamperes. **Average battery life:** Up to 25 hours intermittent operation. **Dimensions:** 7¼" W x 5¼" H x 7½" D.



MR-21A
$109.95

Heathkit "Mariner" All-Transistor 3-Band Radio Direction Finder

• Covers Beacon/Consolan, AM & Marine telephone bands • All-transistor circuitry for dependability, long life, & low battery drain • Independent built-in battery power supply • Simple to build–complete with factory built & aligned "front-end" tuner and prewired component package

INSURES THAT EXTRA MARGIN OF SAFETY. Shows you through accurate triangulation exactly where you are–as easy as reading a map. Keeps you posted on the latest weather reports. Doubles as a communications receiver in emergencies. Even entertains the crew with popular AM radio! That's the versatile performance of the Heathkit "Mariner" . . . all for only $109.95.

EXTRA SENSITIVE . . . ACCURATE MEASUREMENTS. All 3 bands provide long range and high performance. The automatic gain control provides a deep, distinct null for easier, more accurate bearings. The loop antenna rotates over a 6½" compass rose for accurate chart plotting.

RESOLVES THE PROBLEM OF THE DOUBLE NULL. A telescopic whip antenna and "sense" circuitry give true directions by eliminating the double null. Dependable "homing" and fast plots for triangulation are assured.

TRUE NAUTICAL STYLING AND ENGINEERING. A spring-return switch enables dial and meter lighting for nighttime operation without putting a continuous drain on the batteries. Battery power is internal, providing complete portability and independence from "ship" power. Battery life is long . . . up to 1000 hours. The styling is handsome, practical, and "salty" . . . with a rust-proof metal cabinet styled in black, white, gray & blue . . . makes a worthy addition to any boat. Simple step-by-step assembly manual includes installation & operating instructions, plus a section on direction finding theory. Cruise with greater safety this coming season . . . take along a "Mariner"!

Kit MR-21A, 13 lbs...no money dn., $11 mo.....**$109.95**

MR-21A SPECIFICATIONS—Beacon band: 188 to 410 kc. **Broadcast band:** 535 to 1620 kc. **Marine band:** 1650 to 3450 kc. **Sensitivity for 6 DB signal-to-noise ratio:** BC band, 40 uv/ meter; Beacon band, 120 uv/meter; Marine band, 25 uv/meter. **Normal bearing accuracy:** ±3°. **BFO:** 455 kc, switch-selected. **Speaker:** 4" x 6" weatherproofed. **Power requirements:** 9 volts from 6 standard size "D" flashlight batteries. **Battery drain:** 90 ma @ 350 mw max. output level. **Battery life:** 500-1000 hours. **Dial light:** Spring-return switch operated. **Null & Tuning indicator:** 0-1 ma meter. **Transistors:** (1) 2N409 Sense amplifier; (1) T1363 RF amp.; (1) 4JX-1D925 Oscillator; (1) 2N1526 mixer; (5) 2N1274 AGC amp., audio amp., audio output & BFO oscillator; (2) T1364 1st & 2nd I.F.; (1) crystal diode detector. **Dimensions:** 10" H x 10" W x 8½" D including base and loop.

Heathkit Foghorn/Hailer/Boat Horn . . . Powerful, Dependable, 30-Watt Peak Circuit

• Just flip a switch to use a fog horn, deck hailer, or boat horn • All-transistor circuit • 10" weatherproof horn speaker for deck mounting • Fused electronics for protection • Gimbal mounting bracket for versatile installation • Fast, stable circuit board construction

USE IT AS A FOGHORN! . . . The new MD-24 provides a powerful warning tone that penetrates the foggy atmosphere for more than a mile. Just set the function switch to "foghorn" and the electrically-timed tone sounds for six seconds, rests for twenty seconds, then recycles.

USE IT AS A DECK HAILER! . . . projects your voice up to several hundred yards. Excellent for docking, fueling, and hailing other boats.

USE IT AS A BOAT HORN! . . . Just push the panel-mounted horn button to warn other craft, and signal for bridge openings.

RELIABLE PERFORMANCE . . . EASY TO INSTALL! . . . powerful all-transistor circuitry assures dependable performance at all times. Runs cool with no component deterioration as with tube-type units.

Kit MD-24, Includes basic unit, plus PTT mike & 10" deck speaker, 12 lbs....no money dn., $8 mo.....**$79.95**

MD-24 SPECIFICATIONS—Output power: 30 watts peak. 20 watts continuous. **Fog horn sequence:** 6 second on, 20 seconds off. **Cable furnished:** 20' speaker cable. **Power requirements:** 12 v. DC, 4.0 amps. Max. (horn sounding), less than 0.1 amp. no signal. **Overall size:** 4⅞" H x 6½" W x 6" D. **Color styling:** White, gray & black. **Cabinet:** Aluminum.



MD-24
$79.95

Choose The Right



Heathbuilt 150-Watt Marine Radiotelephone . . . Dollar Per Watt . . . Dollar Per Feature, You Can Buy No Better!

• 150-watt power input • 8 crystal-controlled transmit and receive channels (2-5 mc) • AM broadcast band reception • 15-watt deck hailing capability • All solid-state receiver circuitry • Operates remotely with MWA-15-1 • Completely assembled & tested • FCC type accepted for party boat use & D.O.T. approved

150 WATTS OF INPUT POWER! . . . through modern, dependable Heath design and engineering . . . reach out to other ships, the Coast Guard, & telephone company . . . up to 150 miles away! The panel mounted relative power meter lets you know your MWW-15 is transmitting with maximum effectiveness . . . using full power. Cruise with safety this coming season . . . cruise with a Heathbuilt MWW-15 on board.

INCLUDES COMPLETE INSTALLATION / OPERATING / SERVICE MANUAL . . . discusses in plain talk how to use your radiotelephone . . . includes all necessary information, FCC forms, regulations, & applications. Complete instructions including pictorial diagrams for installation by FCC-licensed technician. Get quality and performance . . . get a full 150 watts at a 75 watt price. Choose the MWW-15.

Assembled MWW-15, 31 lbs. . . $43 dn., as low as $25 mo. **$425.00**
Assembled MWW-15R 41 lbs. . . 150 watt 'phone plus remote control. . . write for credit details. **$520.00**
Assembled MWA-15-1 Radiophone remote control unit, 10 lbs. . . no money dn., $10 mo. **$95.00**
Assembled MWA-15-2 Optional Push-to-talk microphone, 2 lbs. **$9.95**
Extra transmit & receive crystals (specify), 1 lb. . . . . ea. **$2.95**
24' Radiotelephone Antenna . . . with laydown swivel base & high impact side mount. Ready to install.
MDP-74, 14 lbs. . . no money dn., $7 mo. **$69.95**

MWW-15 SPECIFICATIONS—RECEIVER: Frequency range: Marine, 2-5 mc. Broadcast 540-1620 kc. **Sensitivity:** (providing 10 db S/N ratio or better) Marine channels, 2 microvolts; Broadcast, 10 microvolts. **TRANSMITTER: Frequency range:** 2-5 mc marine bands. **Final power input:** 150 watts. **RF output:** 80 watts. **Power requirements:** 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 20 amps. **Dimensions:** 6½" H x 11¼" W x 17" D.



Heathbuilt MWW-14 . . . Modern Engineering In A Marine Radiotelephone

• 75-watt power input • 6 crystal-controlled transmit and receive channels (2-5 mc) • AM broadcast band tuning • 15-watt deck hailing capability • Transistorized receiver • Assembled & tested • FCC type accepted for "party-boat" use and D.O.T. Approved

WHAT TO LOOK FOR IN MODERN MARINE ELECTRONICS! . . . Innovation has brought new compact size, more dependable solid-state circuitry, higher efficiency and lower current demands to marine electronic equipment. "Human engineering" has resulted in the design and layout of controls so that equipment is easy to operate, and fully representative of how the equipment is operating. *These are the features of the MWW-14!* Here is a 75-watt size marine radiophone that brings marine electronics up to date! Go ahead . . . look over the styling . . . read the specifications. You'll agree the MWW-14 is your best buy.

OWNER'S MANUAL IS COMPLETE . . . gives all the information you need, plus hints on good operation. Includes instructions for installation by FCC licensed technician. *Compare*—you'll choose the MWW-14.

Assembled MWW-14, 31 lbs. . . No money down, $26 mo. **$279.95**
MWA-14-1 Telephone-type hand set. . . 2 lbs. . . No money down, $5 mo. **$24.95**
Extra transmit & receive crystals (specify), 1 lb. . . . . each **$2.95**

18' RADIOTELEPHONE ANTENNA . . . with laydown swivel base & high impact side mount. 2-3 mc band.

MDP-13, 12 lbs. . . no money dn., $6 mo. **$59.95**

MWW-14 SPECIFICATIONS—RECEIVER: Frequency range: Marine, 2-5 mc. Broadcast, 540-1620 kc. **Sensitivity:** (providing 10 db S/N ratio or better) Marine channels, 2 microvolts; Broadcast, 10 microvolts. **TRANSMITTER: Frequency range:** 2-5 mc marine bands. **Final power input:** 75 watts. **RF output:** 40 watts. **Power requirements:** 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 16 amps. **Dimensions:** 6½" H x 11¼" W x 17" D.



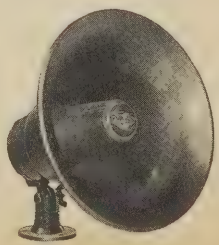
The Smartest Remote Control To Complement The Bridge Of Any Boat!

MWA-15-1
$95.00

• Full MWW-15 remote control—including power on/off, volume, squelch, mode switch, and channel selector • Telephone handset • Universal gimbal mounting • Completely factory assembled with detailed installation/operating manual included • Styled to match MWW-15 • Includes 25' of interconnecting cable with all connectors preassembled

Order Model MWW-15R for Radiophone & Remote Control combination factory assembled and ready to install! Includes assembled remote, cable, & drive motor. Order for Remote Control alone (MWA-15-1) includes all necessary hardware plus instructions for installation of drive motor in MWW-15.
Assembled MWA-15-1, 10 lbs. . . no money dn., $10 mo. . . **$95.00**

MWA-15-1 SPECIFICATIONS—Front panel controls include: Squelch, On/Off and Volume, Mode — internal speaker — external speaker-handset, Channel selector. **Dimensions:** 5" H x 9" W x 4¾" D.



University Deck Speaker

HEATH RECOMMENDED HORN PROJECTOR . . . for use as a deck hailer speaker with the MWW-14 & MWW-15 Radiophones. Unit is weatherproof with marine gray finish and "any angle" swivel mounting. Specs: 25 watts, 8 ohms, 200-13,000 cps.

Model MDP-104, 7 lbs.,
mftrs list $34.50. . . . . Net **$20.29**

Gift... Heathgift® Marine Gear

HEATHKIT®

Heath/Built 25-Watt Radiophone . . . Perfect For All Outboards & Small Utility Cruisers



MWW-13AS
$189.95

• Choose the complete MWW-13AS system for owner installation • Choose separate components for installation with technician checkout • 4 crystal-controlled transmit & receive channels • Covers 2-3 mc marine–receives AM broadcast band • 10-transistor, 5-diode, 3-tube circuit • Built-in heavy-duty transistor power supply • FCC type accepted • Factory assembled & tested, ready to install

MWW-13A SPECIFICATIONS—Frequency range: 2-3 mc. **Broadcast:** 550-1600 kc. **Receiver sensitivity for 10 DB S/N ratio:** Marine—3 microvolts—Broadcast—10 microvolts. **Audio output:** 3 watts to internal speaker. **Transistor complement:** (1) 2N1525 Mixer; (1) 2N1525 Oscillator; (1) T1364 1st I.F.; (1) 2N1274 1st Audio; (3) 2N1039 Audio Driver & Power Converters; (2) 2N1525 2nd & 3rd I.F.'s; (2) 2N301 Audio Output & Modulator; (6) diodes, AVC overload, Squelch, Noise Limiter & Detector. **Transmitter RF input:** 25 watts. **RF Output:** 13 RF watts. **Transmitter tube complement:** (1) 6AK6 Oscillator; (2) 6AQ5 amp. **Power requirements:** 12 V DC, receiver only, .350 amps.; standby, 1.2 amps.; transmit, 5 amps. **Dimensions:** 4½" H x 8¼" W x 10½" D.

SHOVE OFF ON THOSE LONGER CRUISES NEXT SEASON . . . you'll enjoy boating with a new sense of confidence, if you take aboard the reliable MWW-13A. Cruise with confidence, knowing the MWW-13A is ready to put you in instant contact with the Coast Guard, other ships, or the telephone company on the marine band. Enjoy music, news, and sports on the AM band.

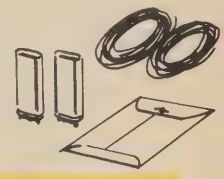
GET DEPENDABLE COMMUNICATIONS! . . . MWW-13A features proven performance . . . components are well rated and fully circuit breaker protected (no fuses to replace). The heavy-duty transistor power supply means high efficiency and years of trouble-free performance.

OUTBOARD MARINERS . . . INSTALL IT YOURSELF FOR EXTRA SAVINGS! Choose the pretuned MWW-13AS system, and use the motor as the ground system . . . antenna and all accessories included! Inboard and sailboat owners can purchase the MWW-13A radiotelephone separately for use with any good ground system such as the Heathkit MD-14 below.

Both versions include 2182 & 2638 kc transmit & receive crystal (ship-to-shore & distress channels). Move out to greater cruising distances this season with the added safety, savings—*including lower insurance rates*—and convenience of a Heath-Built 25-watt radiophone!

Assembled MWW-13AS, Complete system for do-it-yourself installation on outboard powered boats, includes radiophone, antenna & instructions, 22 lbs. . . No money dn., $18 mo. **$189.95**
Assembled MWW-13A, Radiophone for technician installation on any boat, 17 lbs. . . No money down, $16 mo. **$164.95**
MDP-93, 13' Fiberglass Antenna, 5 lbs. . . . (Motor freight or Express only), no money dn., $5 mo. **$34.95**
MDP-103, Swivel lay-down base mt., 2 lbs. **$9.95**
Extra transmit & receive crystals (specify) 1 lb. . . . . each **$2.95**

Complete Package MWW-13AS For Do-It-Yourself Outboard Installation! Includes: 25-watt Radiotelephone, "gimbal" mounting bracket, 13' antenna (MDP-93), antenna cable, ground cable, power cable, crystals, push-to-talk microphone, FCC License pack with copy of FCC Regulations and complete instructions!





Ⓐ Heathkit Fuel Vapor Detector . . . A Safety "Must!"

WARNS OF COMBUSTIBLE GAS FUMES! . . . provides visual warning, or may be connected to alarm, ventilator systems, or to disable ignition system (or combination of systems). All solid-state circuitry provides the maximum of dependability. Selftesting . . . malfunction gives warning. Operates on 12 VDC pos. or neg. ground.

Kit MI-41, 4 lbs. . . no money dn., $5 mo. **$39.95**

MI-41 SPECIFICATIONS—Voltage: 12 V DC. **Current:** 1.0 amp. **Panel size:** 5" x 3 7/16". **Depth:** 3⅜". **Detector head size:** 1½" round x 2½" long. **Length of interconnecting cable supplied:** 15'. **Color:** Marine White & Black. **Material:** Aluminum. **Temp. range:** —20° C to +80° C.

Ⓑ Heathkit All-Transistor Tachometer

OPERATES ON 6, 12, 24 OR 32 V. DC SYSTEMS! Works on all inboard or outboard marine & auto engines (1-6 cylinder, 2 cycle or 1-16 cylinder, 4 cycle) that use standard coil & distributor ignition systems. Switch selection of 0-4000 & 0-8000 rpm ranges, plus wiring option for 0-2000 & 0-4000 rpm. Lighted dial. Ball & socket mount. Pos. & neg. ground.

Kit MI-31A, 3 lbs. . . no money dn., $5 mo. **$24.95**

Ⓒ Heathkit Power Converter . . . Provides Shore-Side AC Power Afloat

FOR BOAT, TRAILER, OR CAR. Changes 6 or 12 VDC to 110 volt square-wave AC power for small appliances. Not recommended for TV, tape recorders, record players, compressor-type refrigerators which require high starting current and/or standard sine wave current. Write for MP-10 Applications Bulletin.

Kit MP-10, 8 lbs. . . no money dn., $5 mo. **$29.95**
Assembled MPW-10, 8 lbs. . . no money dn., $5 mo. **$39.95**

Ⓓ Heathkit Marine Electrical Ground System . . . Extends Radio Range

MARINE RADIOTELEPHONE MUST HAVE AN ADEQUATE GROUND SYSTEM! . . . it is a requirement for efficient signal radiation. The MD-14 provides adequate grounding. Consists of two 8' heavy-gauge copper tubes, tapered at the ends, requires only bolting through-keel (min. length 9', max. thick. 5") & one thru-hull fitting. Does not affect balance, steering, or maneuverability.

Kit MD-14, 20 lbs. (Motor freight or Express only), no money dn., $5 mo. **$29.95**

Heathkit® AM, FM, FM Stereo Table Radios



GRA-21-1
STEREO CONVERTER
$47.00

GR-21
FM RADIO
$56.95

Matching FM Radio And Stereo Converter . . . Ideal For Den, Living Room, Student Dorm!

• Mono FM radio covers 88-108 mc • Receives FM stereo with matching converter (opposite) • 6" x 9" dual-cone speaker • 7 tubes function like 11 • Handsome preassembled walnut cabinet

VERSATILE FEATURES ASSURE TRUE HI-FI PERFORMANCE. Like the 6" x 9" extended range, dual-cone speaker with 6.8 oz. magnet; transformer-operated power supply with silicon diode rectifiers for safe efficient operation; AFC for clean, drift-free reception; a flywheel, edge-lighted slide-rule dial, and tuning "eye" for easy, accurate station tuning; separate tone and volume controls; built-in line cord antenna; external antenna terminals; and switched AC power socket for accessory power if desired.

ATTRACTIVE STYLING, EASY TO BUILD. The preassembled walnut cabinet with a speaker grille that's offset from the front makes the GR-21 an attractive addition to any room . . . measures just 15" L x 8" H x 6" D. Goes together quickly, too with the preassembled and aligned "front-end." Build the GR-21 for mono FM listening . . . add the GRA-21-1 converter for FM stereo!

Kit GR-21, FM Table Radio, 18 lbs. . . no money dn., $6 mo. **$56.95**

• FM stereo converter—completely self-contained, self-powered • Operates with GR-21 (opposite) . . . matching walnut cabinet • 6" x 9" dual-cone speaker • Place both units up to 15' away for maximum stereo

ENJOY BROAD CHANNEL SEPARATION FOR MAXIMUM STEREO! The GRA-21-1 converter can be operated up to 15' away from the FM radio for "concert hall" listening. A stable, synchronized local oscillator is keyed to the stereo "pilot" that's incorporated in FM multiplex transmissions . . . restores a subcarrier to assure low distortion. And carefully designed filter networks separate the signal without degrading the separation.

SIMPLE CONTROLS ASSURE OPERATING EASE! A master volume control adjusts the levels of both channels . . . a tone control that functions independently of the companion radio . . . a mode selector that also turns off the AC power when the converter is not in use . . . and a phase control for optimum channel separation. Features the same 6" x 9" speaker, hi-fi audio circuitry, ease of assembly and identical walnut cabinet as the GR-21 radio.

Kit GRA-21-1, stereo converter, 18 lbs. . . no money dn., $5 mo. . . . **$47.00**



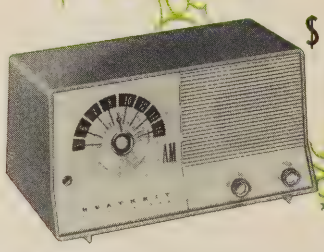
A Gift To Lighten Daily Chores . . . Versatile AM-Clock Radio!

• Timer outlet for household appliances • Sleep switch—radio alarm—output jack for pillow speaker • Transformer operated power supply

BRIGHTEN YOUR DAY WITH THIS DESIGNER-STYLED ENTERTAINER! Wakes you to music, automatically starts the coffee, keeps you posted on news, music, and weather throughout the day, then lulls you asleep at night. 5-tube circuit has built-in antenna and quality clock/timer with sweep-second hand. "Sleep" switch adjustable to one hour. Safe transformer operation. Output jack for pillow speaker. Ivory & beige plastic cabinet. Easy to build!

Kit GR-121, 8 lbs., no money dn., $5 mo. **$28.25**

GR-121 SPECIFICATIONS — Circuit: 5-tube superheterodyne. **Frequency coverage:** 535-1620 kc. **IF frequency:** 455 kc. **Power supply:** 115 v., 60 cycle, AC only. **Speaker:** 3" PM. **Controls:** on/off volume, tuning, "Sleep Switch," "Radio Alarm." **Dimensions:** 5" H x 10" W x 5" D.



GR-10
$16.95

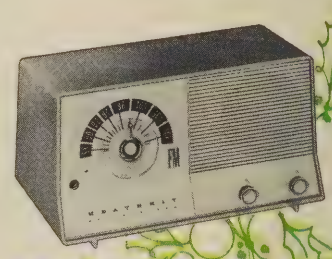
AM Table Radio . . . Ideal for Children's Room, Den, Rec Room!

• Transformer operated • Superheterodyne circuit • Vernier tuning

FEATURES SUPERHET CIRCUIT with automatic volume control and vernier tuning for smooth, easy station selection. Includes built-in antenna plus terminals for external antenna. Handsomely fashioned in ivory & beige plastic cabinet. Safe transformer operation. Add that extra radio now with this easy to build, top performer!

Kit GR-10, 7 lbs. **$16.95**

GR-10 SPECIFICATIONS — Frequency coverage: 535-1620 kc. **IF frequency:** 455 kc. **Power requirements:** 105-125 volts AC 50/60 cps. **Speaker:** 3" PM. **Antenna:** built-in ferrite rod. **Dimensions:** 5" H x 10" W x 5" D.



GR-11
$23.50

FM Table Radio . . . Wonderful Gift . . . Wonderful Sound!

• Transformer operated • Preassembled, prealigned tuning unit for easy assembly

ADD SUPERB FM LISTENING TO ANY ROOM with this compact, easy-to-build table radio! Five tubes function as seven in its safe, transformer operated circuit. Features line cord antenna for strong local station reception. All components are pretuned for fast assembly . . . goes together in only 4 hours. Handsome ivory & beige plastic cabinet!

Kit GR-11, 7 lbs. **$23.50**

GR-11 SPECIFICATIONS — Frequency coverage: 88—108 mc. **IF frequency:** 10.7 mc. **Power requirements:** 105-125 volts AC 50/60 cps. **Speaker:** 3" PM. **Antenna:** built-in line, provision for external antenna. **Dimensions:** 5" H x 10" W x 5" D.

Household Work-Savers!

HEATHKIT®





Heathkit Portable "Wireless" Intercoms . . . Save Steps And Time!

• No connecting wires between units . . . just plug into nearest AC or DC outlet, and you're ready for instant communications • All-transistor circuit–built-in AC power supply • Switch-selected choice of 2 operating frequencies • Compact–fits almost anywhere • Add as many units as you wish anytime • Economical–costs less than 3c a month to operate • Attractive 2-tone beige plastic cabinets . . . match any decor • New variable squelch to hush background noise

EASY TO OPERATE! Plug it in, push the large press-to-talk bar, and talk. That's all there is to it! Saves valuable time, steps, eliminates annoying shouting. Use any number anywhere as long as they operate on the same 117v. AC power line!

IDEAL FOR BABY-SITTING & DICTATION! Press-to-talk bar has a spring-return to listen & a "dictate" hold position for keeping tabs on baby, or for predominately one-way transmissions. All-transistor circuit insures instant operation, long life . . . squelch circuit minimizes background noises. Simple to assemble. Choose a pair now!

Kit GD-51-2 (pair), 10 lbs. . . No money down, $5 mo. **$45.90**
Kit GD-51A (one station), 5 lbs. **$22.95**

GD-51A SPECIFICATIONS—Power requirements: 105-125 V. 50/60 cycle AC or DC. **Standby power:** 2.5 watts. **Transmit frequency:** 220 kc & 180 kc (switch selected). **Size:** 6¼" H x 8" W x 7½" D.

Heathkit Indoor-Outdoor Intercom System . . . Ideal For Home, Office Or Commercial Institutions!

• Master unit handles up to 5 remote stations • Ideal for home, offices, commercial institutions • Weatherproof outdoor remote • Powerful one-watt output for crisp, clear communications • Compact, designer-styled cabinets

EVER WISH YOU KNEW WHO'S CALLING BEFORE OPENING THE DOOR? Now you can . . . with this Heathkit Indoor-Outdoor Intercom System! Provides an added measure of household security . . . especially late at night or when alone! Also ideal for clinics, hospitals, commercial institutions, factories, offices, etc.

PRIVATE CALL OR PAGING! Master unit features selective and all-call switches for private inter-unit communications or paging entire remote group. Also any 2 remotes can communicate. Each remote includes 50' of 3 conductor wire & matching beige plastic cabinet. Weatherproof outdoor remote features rust-proof grille, specially-coated speaker, doorbell button & 50' of 3-wire cable. Order the complete set now!

Kit GD-141 Outdoor Remote, 2 lbs. **$5.95**
Kit GD-121 Master Station, 6 lbs. . . No money down, $5 mo. **$29.95**
Kit GD-131 Indoor Remote, 4 lbs. **$8.95**

SPECIFICATIONS—Power requirements: 117 v ac 50/60 cycles 2.5 watts (idling), 3.5 watts (full output). **Transistors:** four 2N1274. **Dimensions:** 6¼" H x 8" W x 7½" D (master), 5" H x 8" W x 6" D (indoor remote), 5¾" x 4½" panel size (outdoor remote).



A "Little Dandy" Soldering Iron . . . Ideal For Kit-Building
• Perfectly balanced, lightweight, easy to handle • Reaches working temperature 2 minutes after plug-in, stays hot • 30-watt heating element • Iron-clad tip won't corrode, doesn't require frequent "tinning"
Model GDP-105, 1 lb. **$5.40**

B New Deluxe Tool Set . . . Use For Kit-Building Or Any Fix-It Job!
• Combination wire stripper & diagonal sidecutter • Midget longnose pliers; 3 screwdrivers (3/32", ⅛", 3/16") • "Little Dandy" soldering iron (above) • 5 nut drivers (3/16", ¼", 5/16", ⅜", ½") • Nut starter, soldering brush & aid, radio solder
Model GH-25, 4 lbs. **$16.95**

C Heathkit Motor Speed Control For High Torque Power
• Adjustable control dials desired motor speed • SCR with feedback circuit slows motor yet maintains high torque power • Use with tools, appliances with universal AC-DC motor rating up to 15 amps
Kit GD-973A, 3 lbs. **$17.50**

D Heathkit Soldering Iron—Versatile, Easy To Build & Use
• Lightweight . . . ideal for kit-building • 6 volt, 25 watt GE midget iron with non-corroding tip • Transformer operated power supply offers selection of 8 heat ranges for every soldering job • Protective metal cage
Kit GH-52, 5 lbs. **$14.95**

E Vaco Hollow Shaft Nut Driver Set No. S-700
• 7 drivers—sizes: 3/16", ¼", 5/16", 11/32", ⅜", 7/16", ½" • Hollow shafts for nut installation on switches, controls • Store in self-supporting metal rack • Tough, color-coded plastic handles
Model GDP-204, 3 lbs. **$6.42**

F Speedex Wire & Cable Stripper Model 766-1 . . . Save $4.06!
• Simple to use—insert wire into jaws, squeeze handle—insulation comes off just that fast • Graduated jaws accept No. 10, 12, 14, 16, 22 wire • Manufactured by General Cement
Model GDP-663, 2 lbs. . . Mftrs. list $9.95. . . . . **Only $5.89**

Heathkit® Portables With "Big-Set" Sound!

Deluxe All-Transistor AM Portable . . . Surpasses Miniatures In Performance And Economy!



GR-24
$28.25

• 6 silicon transistor, 2 diode circuit gives 8 transistor performance • Uses standard "D" size flashlight batteries . . . only 1/10 the operating cost of typical pocket-size portables • Large 4" x 6" permanent magnet oval speaker for "big-set" sound • Easy-to-read slide-rule dial • "Thumb-touch" controls • Vernier tuning • Tuned RF stage & double-tuned I.F. stage for greater sensitivity & selectivity • Big ½" diameter built-in rod antenna for distant station reception • Handsome black simulated leather case • Fast, simple circuit board construction

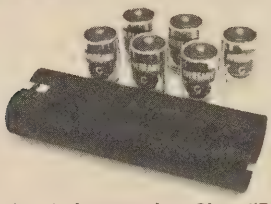
AS FUNCTIONAL AS IT IS BEAUTIFUL . . . that's the deluxe Heathkit GR-24! Ready to travel anywhere to entertain you with popular AM listening. You'll like its compact shape, light weight, and easy-grip handle for convenient carrying. You'll like its clean, bold sound . . . thanks to its large 4" x 6" speaker. You'll like the pulling power of its big ½" diameter built-in rod antenna . . . picks up stations miniatures can't get. And for extra sensitivity and selectivity, there's a tuned RF stage and double-tuned IF stage. Also features an audio output stage that's diode biased for top performance over a wide temperature range even when battery voltage runs low. Its 6-transistor, 2-diode circuit performs like 8 transistors . . . insures instant operation, long life.

MORE ECONOMICAL THAN MINIATURES, TOO! Costs only 1/10th as much as pocket-size models to operate. Uses 6 size "D" batteries (not included) . . . protected against corrosion by a plastic battery holder.

SMART DESIGNER STYLING . . . ASSEMBLES IN 4 HOURS! Handsomely fashioned black simulated leather case with a chrome-finish plastic frame and anodized aluminum grille make the GR-24 an attractive companion. And for quick simple station selection, there are two "thumb-touch" controls and a slide-rule dial. Assembly takes only about 4 to 6 hours with fast circuit board construction. Perfect for anyone on your Christmas gift list.

Kit GR-24, 5 lbs. . . no money dn., $5 mo. **$28.25**

GR-24 SPECIFICATIONS—Tuning range: 535-1620 kc. **IF frequency:** 455 kc. **Sensitivity:** 50 uv/m for 10 db signal-to-noise ratio at 50 mw output. **Audio output:** 250 mw @ 10% distortion. **Speaker:** 4" x 6" oval permanent magnet type. **Battery:** 9 v; 6 "D" flashlight cells. **Current drain:** No signal: 11 ma; 50 mw audio output: 41 ma. **Dimensions:** 3¾" D x 8¾" W x 7" H (overall).



Runs On 6 Inexpensive Size "D" Flashlight Batteries . . . only 1/10 the operating cost of pocket-size portables. Plastic battery holder protects against corrosion.



Wide, Open Chassis Layout . . . and simple circuit board construction assure fast, easy assembly. Takes around 4 to 6 hours.



Perfect Introduction To The Fun Of Kit Building . . . "Beginner's" All-Transistor AM Portable . . . Includes FREE Tool Kit & Battery!

• 6-transistor, 3-diode circuit • 4" x 6" speaker for "big-set" sound • Built-in ferrite rod antenna for distant station pickup • Pre-aligned coil and IF transformers assure peak performance • Rugged simulated tan leather case • Fast, simple circuit board construction

DISCOVER THE FUN OF "DO-IT-YOURSELF" ELECTRONICS! You'll be surprised how easy it is. Simple, step-by-step instructions, large detailed diagrams and easy circuit board construction take you from parts to programs in 4 to 6 hours. Everything you need is included . . . solder, soldering iron, wire stripper & cutter, screwdriver, nut starter, alignment tool . . . even a 9 v. battery for up to 300 hours of good listening.

Kit GR-151A, radio, tool kit & battery, 5 lbs. **$20.65**



Enjoy The Quiet Beauty Of FM With This Deluxe All-Transistor Portable!

• 10 transistor, 2-diode circuit for instant operation, long trouble-free life • Large 4" x 6" PM speaker for hi-fi sound • Automatic Frequency Control for locked-in reception • Treble-cut tone control assures crisp, clear tone • Accurate vernier tuning • 34" telescopic antenna—headphone jack • Simple circuit board construction • Smart tan simulated leather case with curved beige plastic grill

ENJOY A CONCERTO AT THE BEACH . . . anywhere your travels take you. It's easy when you take along the GR-61. Features include terminals for an external antenna, push-pull output stage, headphone jack for private listening or connection to your hi-fi system, and 3 IF stages for full fidelity. Preassembled "front-end," prealigned IF transformers, and simple circuit board construction assure fast, easy assembly. Operates on 6 "C" flashlight batteries (not included) . . . plastic battery holder protects against corrosion.

Kit GR-61, 6 lbs. . . no money dn., $5 mo. **$44.95**

GR-61 SPECIFICATIONS—Tuning Range: 88 mc to 108 mc. **IF Frequency:** 10.7 mc. **Audio Output:** 250 milliwatts. **Loudspeaker:** 4" x 6" permanent magnet. **Tone Control:** Treble-cut. **Battery:** 9 volt, 6 "C" flashlight cells. **Battery Life:** 300 to 500 hours. **Dimensions:** 7¾" H x 10" L x 4" D. (overall). **Styling:** Sun-tan simulated leather case, curved beige plastic grille.

Photographers! Control Print Quality With These Revolutionary Photo Aids!

Heath/Mitchell Fotoval® Darkroom Computer . . . Assures Uniform Prints In Less Time At Lower Cost!

• Accurately & scientifically indicates correct exposure times & photographic paper grades • Cuts darkroom time, reduces paper costs, speeds your enlarging • Quickly produces correctly exposed prints everytime • Gimbal mounting bracket allows installation in any position • Completely safe lighted to permit easy darkroom reading of meter indications • Simple to assemble and operate

THE *FIRST* PRINT IS *THE* PRINT! Unbelievable? Not with the revolutionary Heath/Mitchell Fotoval® Computer System in your darkroom. Just one simple standardizing procedure, and you start producing any amount of beautiful black & white prints quickly, economically. *No* more wasting expensive printing paper . . . *no* more long, laborious hours wasted in the darkroom . . . *no* more guessing which paper grade to use, or how long to expose each print. Imagine the savings in time, paper and money!

HOW DOES IT WORK? With the unique Fotoval 35 mm Test Negative, you quickly & simply determine accurate exposure times for each type & grade of paper or variable contrast filter. You then record this information on the computer scales provided. Next, select the desired paper type & surface, and insert the corresponding computer scale into the Fotoval. Place the negative you wish to print in the enlarger. With the Fotoval light-sensitive probe positioned on the desired detailed black, adjust the meter to full scale using the enlarging lens diaphragm. Then meter the most desirable detailed highlight, and read the exposure time & paper grade (or filter) directly from the computer. Expose for the indicated time and develop. That's all there is to it. All prints will have uniform contrast & density.

PRINTS CAN BE DEVELOPED ANYTIME BY ANYONE! Since all variables are held constant, you keep making prints while someone else, regardless of experience, develops the prints you've already made! Or the undeveloped prints can be stored in a light-tight box for developing at a later time.

IDEAL FOR THE NOVICE AS WELL AS THE PROFESSIONAL! To the professional photographer or printer, the advantages of Fotoval are obvious . . . more prints in less time, consistent print quality, lower paper costs, more profits! The easy operation and simple-to-follow instructions make it simple for the beginner to experience remarkable results, even if he's never attempted enlarging before!

FAST & EASY TO ASSEMBLE! You'll find the Fotoval as easy to build as it is to use. Requires no special skills or knowledge.

Kit PM-14, 8 lbs. . . no money dn., $9 mo. **$89.00**





Calibration Negative
Helps you determine correct exposure time for each contrast grade of paper, and best choice for every negative. Once calibrations are made, they are used for all future printing as long as the developing process stays the same.



Light-Sensitive Probe
Incorporates all important switching. Measures extremely small light areas when scanning negatives for desired shadows & highlights. Fits easily in your hand & easel corners. Magnetized base assures adhesion when placed on working surface.

Now Control Exposures in Tenths Of A Second With The NEW Heathkit Photo Timer!



• Controls exposure time of all printing operations–contact or enlarging • Two switch-selected ranges . . . up to 99 seconds in 1 second steps or 9.9 seconds in 0.1 second steps . . . permits accurate resetting of any interval • Repeatability accurate to within 2% on all settings • Two AC outlets . . . enlarger & safelight • All-electronic circuitry . . . no gear drive mechanisms to wear out as with "clock-motor" devices • Enlarger may be turned on or off manually with Time-Focus rocker switch • Install on wall, place upright or face up on working surface • Styled to match Heath/Mitchell Fotoval® Computer • Easy to assemble and use

QUICKLY EXPOSE MANY PRINTS WITHIN A 2% DEVIATION ON ALL SETTINGS! Now control exposure times in full seconds up to 99, or up to 9.9 in tenths of a second. *All* settings will be accurate within 2%. And since the time intervals are switch-selected, you can accurately reset any interval every time.

QUICK & SIMPLE TO USE! Simply set the desired exposure time and push the "start" button. The Heathkit Photo-Timer turns on the enlarger & extinguishes the safelight. At the end of the pre-selected interval, it automatically turns the enlarger off and the safelight on. And to quickly expose more than one print, simply tap the "Start" button to repeat the cycle . . . every exposure will be accurate to within 2% of the first interval. A spring-return "stop" switch halts exposure process, if you decide time interval is incorrect. Quick & easy to assemble, too.

Kit PT-15, 4 lbs. . . no money dn., $5 mo. **$24.95**

PT-15 SPECIFICATIONS—Timed cycle: x1.0 Range: 1 to 99 seconds in 1-second steps. x0.1 Range: 0.1 to 9.9 seconds in 0.1-second steps. **AC outlets:** Enlarger and safelight; each outlet provides 105-125 v. AC @ 350 watts maximum (3 amperes). **Accuracy:** Actual timed cycle will be within 5% of time selected. **Repeatability:** All timed cycles at one selected setting within 2% of each other. **Switches:** 0-90 seconds, in 10-second steps; 0-9 seconds in 1 second steps; start pushbutton; Time-Focus; Stop; Range, x1.0 & x0.1; On-Off. **Controls:** x1.0 calibration; x0.1 calibration; sensitivity. **Regulation:** Internal circuits regulated at 150 volts DC by an OA2 regulator tube. **Power requirements:** 105-125 v. AC, 50/60 cps, 6 watts. **Dimensions:** 6⅝" W x 6½" D x 3¼" H overall.

SAVE THIS COUPON

HEATH COMPANY
Benton Harbor, Michigan 49023

THIRD CLASS

Postmaster: If undeliverable, please do not return.

BULK RATE
U.S. POSTAGE
PAID
Chicago, Ill.
Permit No. 9169

All prices quoted are Net F.O.B. Benton Harbor, Michigan and apply to United States and Possessions only.
Prices and Special Offers herein effective Oct. 1, 1965.
All prices and specifications subject to change without notice.
Dealer and export prices slightly higher.

760 A

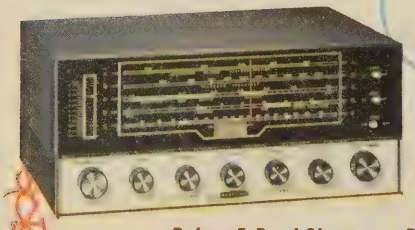
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This certificate is worth 10% discount when applied to order for less than $50 in Heathkit equipment or a maximum of $5 on an order of $50 or more of Heathkit equipment listed in our current catalog or supplement. Offer expires at date shown on label. This certificate is redeemable only on purchases by direct mail or at the factory sales room in St. Joseph, Michigan. This certificate is not redeemable in cash, is not transferable, and may not be applied to sale items, previous orders or combined with other certificates or discounts.

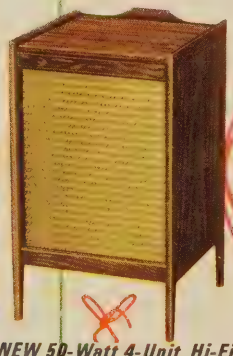
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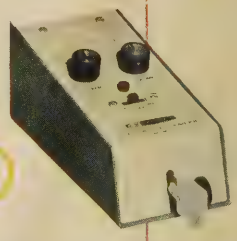
Over 250 HEATHGIFTS®...A Kit For Everyone On Your Gift List



Deluxe 5-Band Shortwave Receiver, p. 6



NEW 50-Watt 4-Unit Hi-Fi Speaker, p. 22



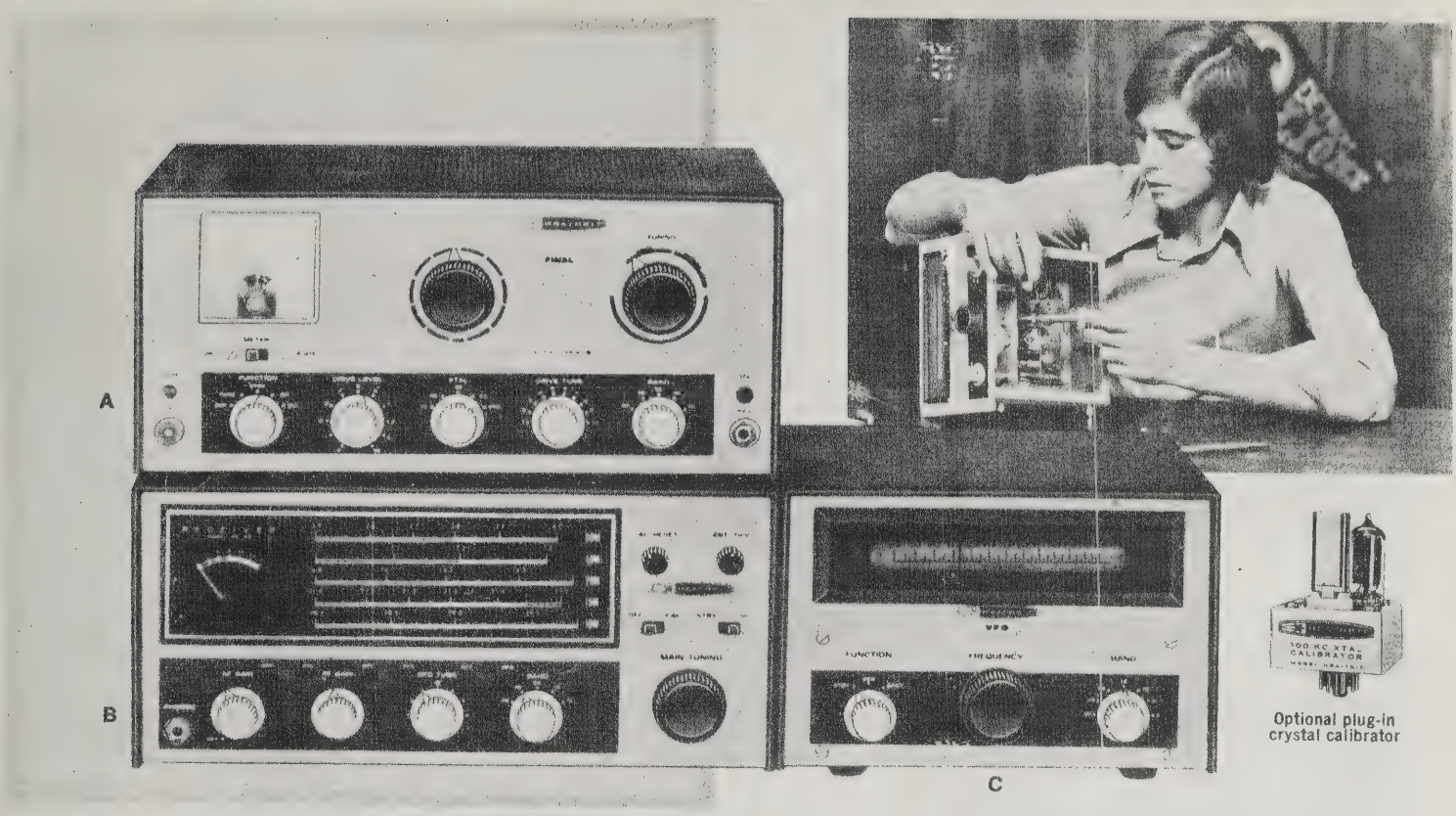
NEW Electronic Keyer For Hams, p. 33



NEW 25" Rectangular Color TV, p. 3



NEW Budget All-Transistor FM Stereo Tuner And 30-Watt Amplifier, p. 14



A) Heathkit DX-60B Phone & CW Transmitter...89.95

Run 75 watts CW input for novice operation — a full 90 watts phone or CW when you move up to general. Pi output provides fast, easy tuneup into any 50-75 ohm resistive load. Drive Level control, grid/plate current meter and Drive Tune control enable proper tune-up for maximum output, minimum harmonics, best quality audio. Four crystal sockets and provision for operation with external VFO such as the HG-10B provide maximum operating versatility. Easy assembly . . . requires only a VTVM for alignment. Get on the air now, with a rig that'll last a lifetime — order your Heathkit DX-60B today.

Kit DX-60B, 24 lbs., less crystals, mailable **89.95**

DX-60B SPECIFICATIONS — Power input: 90 watts, peak; controlled carrier phone, or CW. **Output impedance:** 50-75 ohm (coaxial). **Output coupling:** Pi-network. **Operation:** CW or AM phone — crystal or VFO control. **Band coverage:** 80 through 10 meters. **Power requirements:** 120/240 VAC, 50/60 Hz, 225 watts. **Dimensions:** 6½" H x 13¾" W x 11½" D.

B) Heathkit HR-10B 5-Band Receiver...89.95

Ideal for the novice or beginning general class ham who demands top performance at a modest price. Tunes AM, CW & SSB, with excellent stability for CW & sideband. Full 80 through 10 meter coverage with each band separately displayed on the accurately calibrated illuminated slide-rule dial. Separate RF and AF gain controls provide extra convenience . . . BFO allows easy, fast sideband tuning. A high quality crystal lattice filter delivers sharp 3 kHz selectivity. 1 μV sensitivity provides capability that puts many more expensive receivers out of the QSO. Built-in "S" meter, switchable AVC and automatic limiter provide the versatility you expect in a first-rate communications receiver. Provision for the optional HRA-10-1 kHz crystal calibrator. Alignment requires an RF signal generator and VTVM.

Kit HR-10B, less speaker, 20 lbs., mailable **89.95**

Kit HRA-10-1, plug-in 100 kHz crystal calibrator, 1 lb., mailable . **11.50**

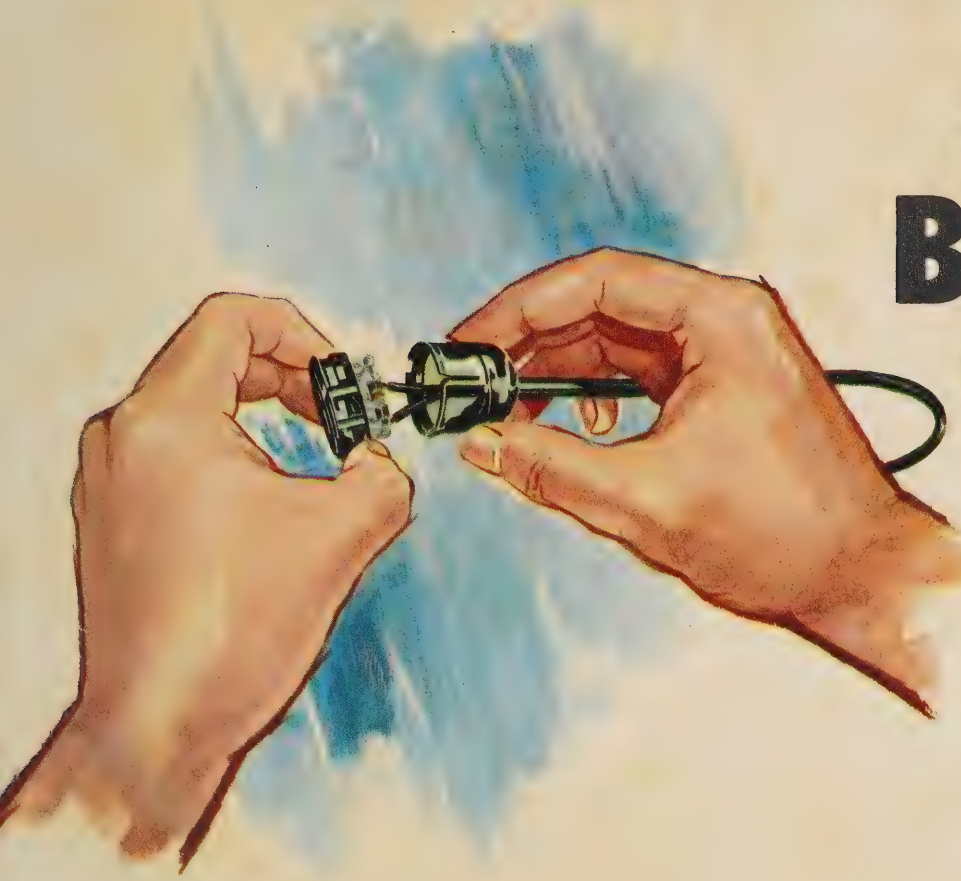
HR-10B SPECIFICATIONS — Frequency coverage: 80 Meter Band, 3.5 to 4.0 mHz; 40 Meter Band, 7.0 to 7.3 mHz; 20 Meter Band, 14.0 to 14.35 mHz; 15 Meter Band, 21.0 to 21.5 mHz; 10 Meter Band, 28.0 to 29.7 mHz. **Intermediate frequency (IF):** 1681.0 kHz. **Sensitivity:** 1 microvolt for a 10 dB signal plus noise-to-noise ratio. **Selectivity:** 3 kHz at 6 dB down, 9 kHz at 40 dB down. **Image rejection:** 40 dB or better. **Input impedance:** 50 to 75 Ω, coaxial. **Audio output impedance:** 8 Ω, or 500 Ω. **Panel controls:** AF GAIN, AC OFF-ON; RF GAIN; BFO TUNE; BAND Switch; MAIN TUNING; CALibrate; ANTenna TRIMmer; REC-STBY Switch; CALibrate ON-OFF; BFO On-OFF; AVC On-OFF; ANL On-OFF. **Tube complement:** 6BZ6 RF Amplifier; 6EA8 Mixer Oscillator; 6BA6 1st IF Amplifier; 6EA8 2nd IF Amplifier-BFO; 6BJ7 Detector-AVC-ANL; 6EB8 1st Audio-Audio Output; 6X4 Rectifier. **Power requirements:** 120/240 VAC, 50/60 Hz, 50 watts. **Cabinet size:** 6½" H x 13¾" W x 11½" D.

C) HG-10B 80-2 Meter VFO...55.95

Our HG-10B VFO covers 80 through 2 meters with separate calibrated scales for each band. Has smooth 28:1 vernier tuning; temperature compensated circuitry for drift free tuning. Provides 5 V rms in the 3.4-4, 7-7.425 and 8-9 MHz ranges. Compatible with virtually all grid-block keyed transmitters and most cathode-keyed transmitters. Alignment requires receiver of known accuracy covering either the 80-2 meter bands or 3.5 to 8.222 MHz range.

Kit HG-10B, 12 lbs., mailable **55.95**

READ THIS BOOKLET FIRST



KIT BUILDERS GUIDE

HEATHKIT

You will find important information on tools and soldering, plus many guides to good kit assembly.

- How to unpack your kit and check the parts.
- How to follow the directions in the kit assembly manual.
- What to do if you have any problem with the completed kit.
- Heathkit Warranty.

Take a few minutes now to read through this booklet before you start to work on your kit.

After you finish your kit, be sure to keep the Assembly Manual and this booklet for reference.

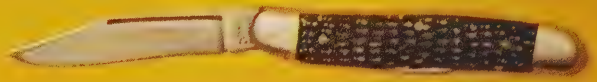
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RULER

SCREWDRIVER — 3/16" Blade





KNIFE

LONG-NOSE PLIERS



SCREWDRIVER — 1/8" Blade

DIAGONAL CUTTERS



TOOLS

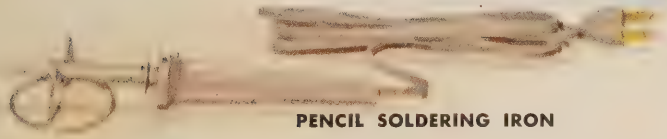
These are the tools you will need to assemble a typical Heathkit. The additional tools shown on the right side of Page 3 will make kit assembly easier, but they are not normally required.

Recommended:

HEATHKIT SOLDERING IRON MODEL GH-17

- 3 Switched Temperatures.
- Safety Cage
- Designed for Heathkit Wiring





PENCIL SOLDERING IRON

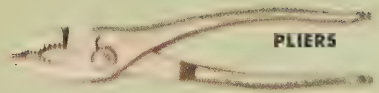
The ideal soldering iron should produce enough heat for "high-heat" soldering (like chassis solder lugs), but should not be too hot for "low-heat" soldering (like circuit board connections). A small, efficient soldering iron or soldering pencil (about 25 watts with a ⅛" to ¼" tip) is ideal for circuit board work and practically all chassis connections. Such soldering irons are inexpensive and have the advantage of being hot when you need them. *Soldering irons larger than about 25 to 35 watts may be useful for some chassis wiring, but must not be used with circuit boards. Soldering guns, while handy for repairs, are not recommended for kit work.*

Other Useful Tools

SOLDERING AID



PLIERS



WIRE STRIPPERS



NUT DRIVERS



A Heathkit Extra for Your Convenience

End for 6-32 Nuts — End for 3-48 Nuts



PLASTIC NUT STARTER

- Pick up and start nuts on the threads of a screw
- Can be cut in half



UNPACK

Unpack your kit carefully and check each part against the Parts List in the Assembly Manual. The Parts Pictorial will help you to identify the parts. (If any part is damaged or missing, see "Service" on Page 14.)

When you unpack your kit . . .

- ☐ Save the packing material until all the parts are accounted for.
- ☐ Try to acquaint yourself with the parts as you check them.
- ☐ Lay out the parts so they will be handy when you assemble the kit.



This is a convenient way to arrange the parts. The leads of resistors and capacitors can be inserted in the edge of a corrugated box. Muffin tins and molded egg cartons make handy trays for small parts.

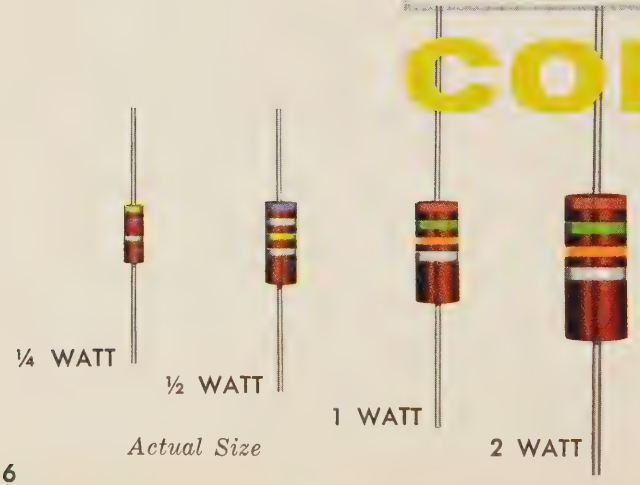


TOLERANCE	
Gold	5%
Silver	10%
None	20%

RESISTOR COLOR CODE

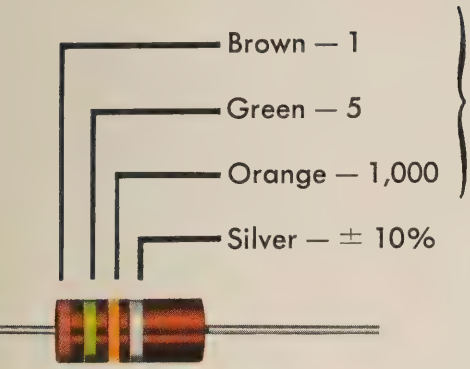
COLOR	1st DIGIT	2nd DIGIT	MULTIPLIER
BLACK	0	0	1
BROWN	1	1	10
RED	2	2	100
ORANGE	3	3	1,000
YELLOW	4	4	10,000
GREEN	5	5	100,000
BLUE	6	6	1,000,000
VIOLET	7	7	10,000,000
GRAY	8	8	100,000,000
WHITE	9	9	1,000,000,000
GOLD	—	—	.1
SILVER	—	—	.01

COMPONENTS

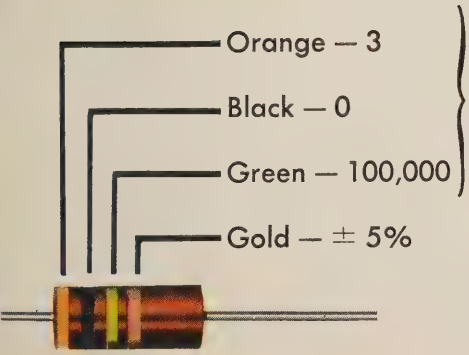


The color bands around one end of a resistor tell its value in ohms(Ω). Each color represents a number, as shown in the chart above. The first and second bands, at the end of the resistor, represent the first and second digits of the value; the third band represents the multiplier. A fourth band tells the tolerance rating. The resistors in Heathkits have a tolerance of ± 10%, unless they are described otherwise in the Assembly Manual.

Examples:



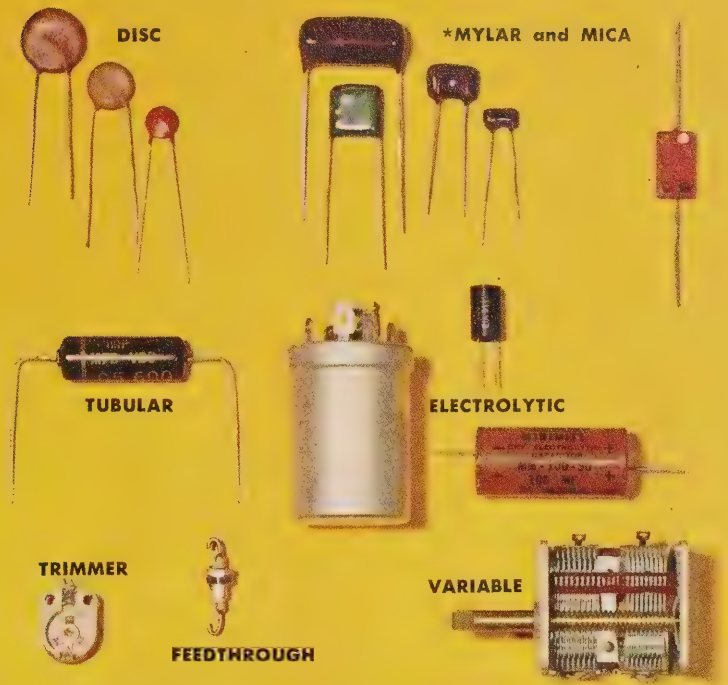
15 x 1,000 = 15,000 Ω (or 15k Ω)



30 x 100,000 = 3,000,000 Ω (or 3 M Ω)

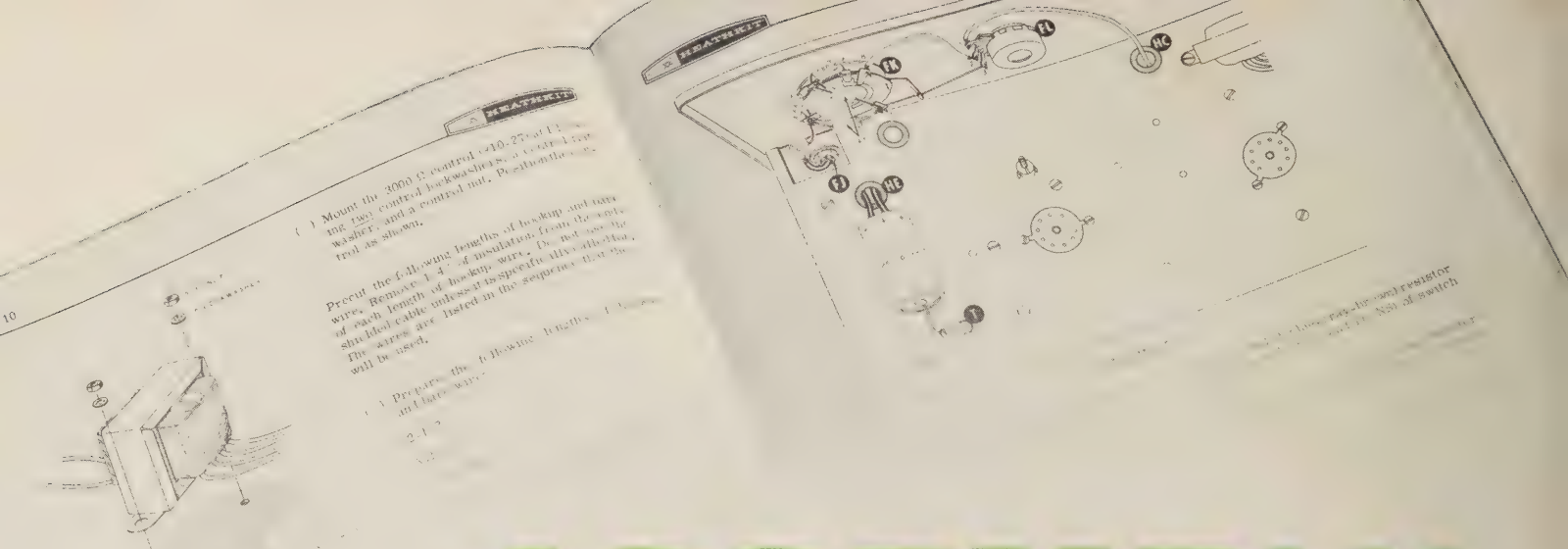
Capacitors

Many different types of capacitors are used in Heathkit circuits. Several of these capacitors are shown below.



Capacitor values are given in μF (microfarads) and pF (picofarads). The term $\mu\mu$F (micro-microfarads) means the same as pF. The value is generally printed on the capacitor, but occasionally a capacitor is color coded; the color code for these capacitors is given in the Assembly Manual. The letter K or M may be printed on some capacitors, but is not a part of the value.

*DuPONT REGISTERED TRADEMARK



ASSEMBLY

When you assemble your kit, BE SURE TO . . .

- Read each step all the way through.
- Check the step off in the space provided (√). It may also be helpful to mark each wire and part on the Pictorial as it is installed.
- Have plenty of well lighted work space in an area where you can leave the kit undisturbed.
- At one session, work only as long as you enjoy it.

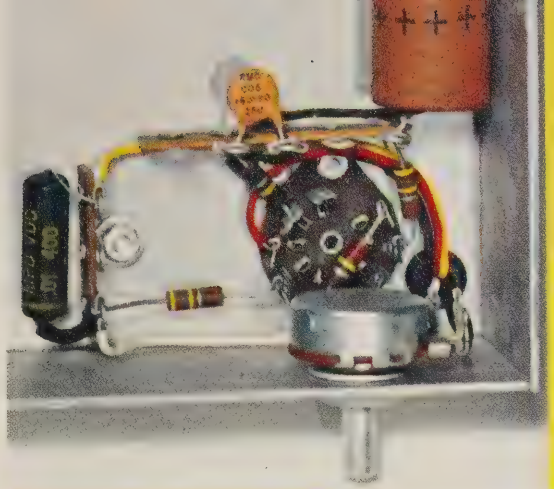
ASSEMBLY...

The following soldering abbreviations are used in the Step-by-Step Assembly instructions: (NS), (S-1), (S-2), (S-3), etc.

(NS) means not to solder because other wires will be added later.

"S-" with a number, such as (S-3), means to solder the connection. The number tells how many wires are at the connection. (Where a wire passes through a connection and then goes to another point, it will count as two wires, one entering and one leaving the connection.)

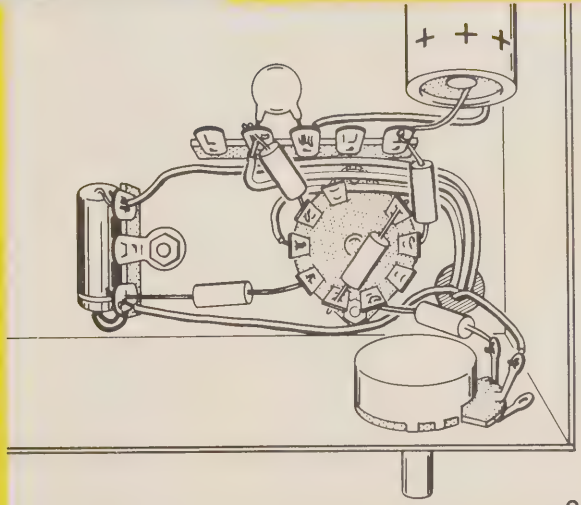
The drawings in the Step-By-Step Assembly section of Assembly Manuals are called Pictorials and Details. Pictorials show the overall operation for a group of assembly steps; Details are used in addition to the Pictorials to illustrate a single step.



The drawings in the Assembly Manual may be slightly distorted to show all the parts clearly.

ACTUAL

DRAWING





Cut the leads to the proper length



Fasten the lead ends



SLEEVING

Some kits use sleeving to prevent bare wires from touching other bare wires, parts, or the chassis. Use sleeving where it is called for in the instructions.

LEAD LENGTH

The leads on resistors, capacitors, and similar components are generally much longer than needed to make the required connections. Cut the leads to the proper length before installing the part; the leads should be just long enough to reach and fasten to their connecting points.

HOOKUP WIRE

Use hookup wire (the type with colored insulation) whenever wire is called for. If other types of wire are used, they will be named in the Assembly Manual. To prepare a length of hookup wire, you will normally remove ¼" of insulation from each end. For stranded wire, apply solder to the ends to hold the strands together.

TRANSFORMER LEADS

Do not pull directly on the lead when you remove insulation from the leads of transformers or similar components; this could break an internal connection; instead hold the lead with pliers.



These two photographs show exactly the same circuit, wired properly in one case and improperly in the other. Your wiring should be as neat as possible. Install and position each wire and part as shown in the Assembly Manual.



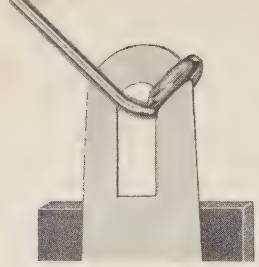
CIRCUIT BOARD PARTS MOUNTING

These photographs show right and wrong ways of mounting various parts. Make sure the leads of disc capacitors are straight. Parts with lugs need no preparation unless the lugs are bent, in which case they should be straightened with pliers.

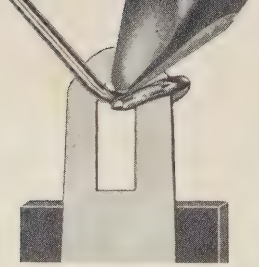


Mount each part in the right place. Parts should be mounted tightly against the circuit board (unless the step directs otherwise).

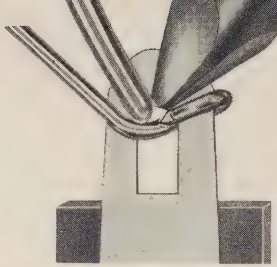
The leads of each part should be inserted through the correct holes in the board, and then bent outward on the other side of the board, as shown, to hold the part in place. After a group of parts has been installed, solder each lead to the foil and clip off excess lead lengths close to the board.



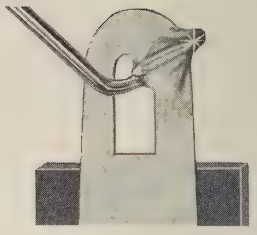
1. Attach the end of the wire to the terminal. If the connection is to be soldered right after the wire is in place, it is not necessary to loop the wire end.



2. Place a flat side of the soldering iron tip against the connection; the tip should touch both the wire and the terminal.



3. Place the solder against the soldering iron tip *and* the connection; the solder will melt and flow into the connection.



4. Remove the solder, and then the iron from the connection. Do not move the wires until the connection has hardened. Check the connection; a good solder joint should look smooth and bright.



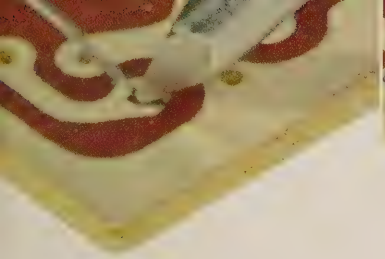
A poor or "cold" solder connection will usually look crystalline and have a grainy texture, or the solder will stand up in a blob and will not have adhered to the connection.

Poor solder joints should be reheated until the solder flows smoothly. Excess solder should be removed by reheating the connection and allowing the excess to flow onto the iron. In some cases, it may be necessary to add a little more solder to obtain a smooth, bright appearance.

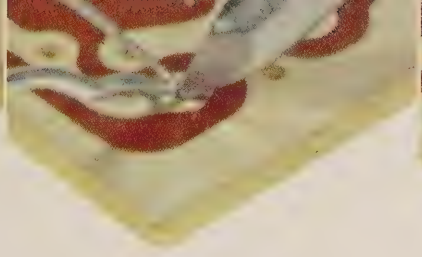
SOLDERING

You MUST have good solder connections. About 90% of all service problems are related to poorly soldered connections. If you are not experienced at soldering, a few minutes practice with some odd lengths of wire will be helpful.

Lugs and wires must be clean and free of wax, frayed insulation, and other foreign substances before they are soldered. Use only enough solder to thoroughly wet the connection; it is not necessary to fill the entire hole in a terminal with solder. Keep the soldering iron tip clean by wiping it from time to time with a damp sponge or cloth.



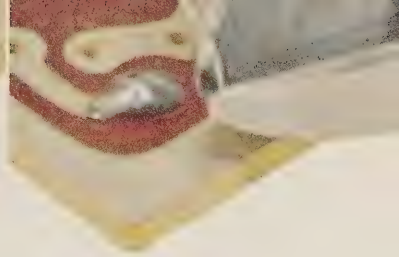
1. Place the tip of the soldering iron firmly against the circuit board foil **and** the wire or lug to be soldered.



2. Touch the solder to **the iron, the foil, and the wire** at the point where they meet. Remove the solder as soon as it begins to melt and flow onto the foil and wire; then remove the iron quickly.



3. Check the connection; a good solder joint should look smooth and bright, and the solder should adhere evenly to both the wire and the circuit board foil.



4. After the solder has hardened, clip off the wire close to the circuit board foil.

NOTE: Be sure to use a low-heat soldering iron for circuit board connections. See Page 3. Do not use **too much** solder. This could cover unused holes, or create a solder bridge between two foils that should not be connected to each other.

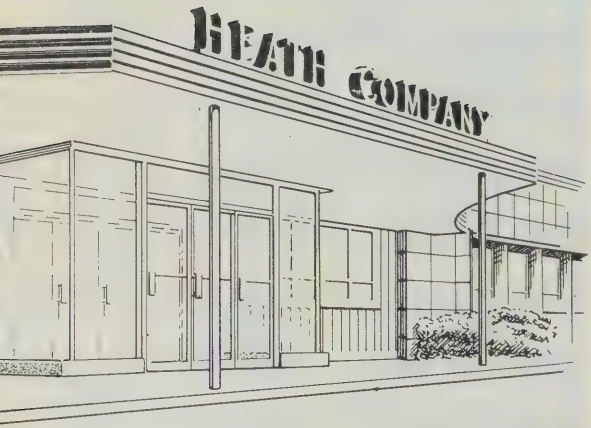
Hold the iron in such a way that solder cannot flow to nearby foils or lugs. Avoid overheating the connections.

ROSIN CORE SOLDER IS SUPPLIED WITH YOUR KIT. THIS TYPE OF SOLDER MUST BE USED FOR ALL SOLDERING IN THE KIT. THE USE OF OTHER TYPES OF SOLDER VOIDS THE WARRANTY, AND WE WILL NOT SERVICE EQUIPMENT IN WHICH ACID CORE SOLDER OR PASTE FLUXES HAVE BEEN USED. IF ADDITIONAL SOLDER IS NEEDED, BE SURE TO PURCHASE ROSIN CORE (60:40 OR 50:50 TIN-LEAD CONTENT) RADIO-TYPE SOLDER.

If solder is accidentally bridged between two foils, it can be cleaned off by heating the connection carefully, and quickly wiping or brushing away the excess solder with a soft cloth or brush.

Plugged holes can be cleared by heating the solder over the hole while gently pushing the lead of a resistor through the hole from the other side; withdraw the lead before the solder rehardens.





REPLACEMENT PARTS

If a replacement part is needed, please fill in the Parts Order Form that is furnished with your kit and mail it to the Heath Company. Or, if you write a letter, include the following information:

- Part number and description as shown in the Parts List.
- Model Number and Series Number of the kit.

If your kit is in the Warranty period, add:

- Date of purchase.
- Nature of defect.

Heath Company will fill your order promptly. Please DO NOT RETURN PARTS unless they are requested. Parts that are damaged through carelessness or misuse by the kit builder will not be replaced without cost.

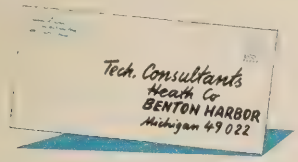
Parts are also available from your nearest Authorized Service Center or Heathkit Electronic Center. These Centers are listed in your Heathkit Catalog. Service Centers require you to return the original part with your request for a replacement.

SERVICE

The following Heath Company services are available if you need them: Replacement Parts, Technical Consultation, and Factory Service. Address all correspondence to HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022. For prompt service, use a separate letter for each department you write to.

TECHNICAL CONSULTATION

You can write to our Technical Consultants for help with any Heathkit equipment, or for answers to any questions about the use of this equipment. (Infor-



mation on special modifications is not available.) The completeness and accuracy of the advice mailed back to you depends entirely on the information in your letter. Be sure to include:

- The Model Number and Series Number of the kit (on blue identification label).
- Date of purchase.
- An exact description of the difficulty. Include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.
- List everything you have done in attempting to correct the difficulty.

FACTORY REPAIR SERVICE

You can return your completed kit to the Heath Company Service Department to have it repaired for a minimum service fee. (Kits that have been modified will not be accepted for repair.) Refer to Shipping Instructions for details on how to package and ship the equipment.

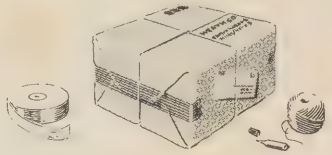


Local repair service is available at Authorized Service Centers and Heathkit Electronic Centers. These Centers are listed in your Heathkit Catalog.

To be eligible for replacement parts under the terms of the Warranty, equipment returned for Factory Repair Service must be accompanied by the invoice or the sales slip, or a copy of either. (If you send the original invoice or sales slip, it will be returned to you.) This also applies to equipment taken to an Authorized Service Center or Heathkit Electronic Center.

SHIPPING INSTRUCTIONS

Check the equipment to see that all parts and screws are in place. Then, wrap the equipment in heavy paper. Place the equipment in a strong carton, and put at least three inches of resilient packing material (shredded paper, excelsior, etc.) on all sides, between the equipment and the carton.



Seal the carton with gummed paper tape and tie it with a strong cord. Ship it by prepaid Express or insured Parcel Post to:

HEATH COMPANY
Benton Harbor, Michigan 49022

Attach a letter containing the following information to the outside of the carton:

- Your name and return address.
- Date of purchase.
- A brief description of the difficulty.
- Your authorization to ship the repaired unit back to you C.O.D. for the service and shipping charges, plus the cost of parts not covered by the Warranty.

WARRANTY

The Heath Company warrants that the parts supplied in its kits (except batteries) shall be free of defects in materials and workmanship under normal conditions of use and service. The obligation of Heath under this warranty is limited to replacing or repairing any such part upon verification that it is defective in this manner. This obligation is further limited to such defective parts for which Heath is notified of the defect within a period of ninety (90) days from the original date of shipment of the kit.

The obligation of Heath under this warranty does not include either the furnishing or the expense of any labor in connection with the installation of such repaired or replacement parts. The obligation of Heath with respect to transportation expenses is limited to the cost of shipping the repaired or replacement parts to the buyer, provided such repair or replacement comes within the terms of this warranty.

The foregoing warranty extends only to the original buyer and is expressly in lieu of all other warranties, expressed or implied. The foregoing warranty is further in lieu of all other obligations or liabilities on the part of Heath and in no event shall the Heath Company be liable for any anticipated profits, consequential damages, loss of time or other losses incurred by the buyer in connection with the purchase, assembly or use of the kit product or components thereof.

The foregoing warranty shall be deemed completely void if acid core solder or paste flux or other corrosive solders or fluxes have been used in assembling or repairing the kit product. Heath will not replace or repair any parts of any kit products in which such corrosive solders or fluxes have been used.

This warranty applies only to Heath products sold and shipped to points within the continental United States and to APO and FPO shipments. Warranty replacement for Heath products sold or shipped outside the United States is on an f.o.b. factory basis. Contact the Heath authorized distributor in your country or write: Heath Company, International Division, Benton Harbor, Michigan, U.S.A.

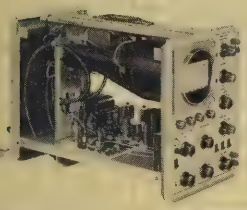
HEATH COMPANY

HEATHKIT

MARCH 1966

Introducing The World's Best Buy In DC Scopes . . .

The New HEATHKIT® IO-14



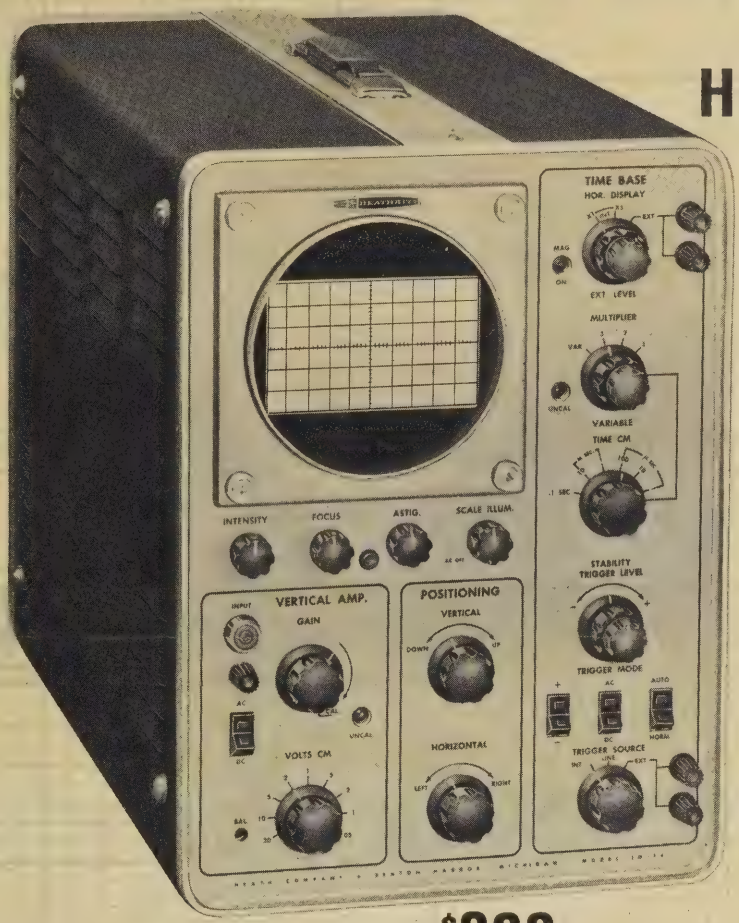
Sharpest Trace—assured by 4,250v. accelerating potential and high-nickel alloy CRT shield. **Matched, Magnetic-Core Delay Lines**—precision, cable type, for fast rise-time pulse work.



Rear Access Door—for direct plate connections. **Circuit Breaker**—for complete protection. **Z-Axis Terminals. 3-Wire Line Cord**—with holders. **Fan Cooling**—with blade guard.



Easy To Build—5 circuit boards and wiring harness. **Rugged**—heavy-duty transformer—forced-air cooling—"U" girder, all-aluminum construction for rigidity.



- DC to 8 mc bandwidth
- Sensitivity 0.05 v/cm AC or DC
- Rise time 0.04 microseconds
- Precision delay line of 0.25 microseconds
- Calibrated 9-position vertical attentuator
- 18 triggered sweep rates from 0.5 sec/cm to 1 microsecond/cm
- Five-times sweep magnifier extends sweep rate to 0.2 microsecond/cm
- Forced-air ventilation for continuous duty
- Electronically regulated power supply

Kit **$299** (available April)

Factory Assembled **$399** (available May)

Full Details on Page 42

GOOD NEWS

21" Color TV Kit Now Ready for IMMEDIATE DELIVERY

No reservations needed.



In Stock—No Waiting

Send Your Order Now. See pg. 3

SPECIAL OFFERS

1. *Free* walnut cabinets with AJ-43D and AA-21D combination order. See pg. 20
2. *Free* GH-52 Soldering Iron with AJ-41 and AA-100 or AJ-32 and AA-151 combination orders. See pg. 23
3. *Free* earphones and world shortwave book with GR-54 radio order. See pg. 8
4. *Save Up To 14% On Complete Marine Radiotelephone Systems!* See pgs. 12-13
5. *Save 5% On Music Systems.* See pgs. 18-30
6. *Save 5% On 2 or More 5-Watt CB Transceivers!* See pgs. 10-11

NEW PRODUCTS THIS ISSUE

1. Deluxe 5" DC 'Scope; pg. 42 & above
2. Part B of the Berkeley Physics Lab with new microwave equipment; pg. 41
3. 21-Speed Electronic Drive for Heath Servo Chart Recorder; pg. 38
4. Dropping Mercury Electrode apparatus for Heath Polarography System; pg. 39
5. Ham radio speaker styled to match deluxe SSB gear; pg. 34

Heath Company • Benton Harbor, Michigan 49022

Plant Location: St. Joseph, Michigan • Catalog Supplement 800/62

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NEWS AND VIEWS OF
HEATHKIT®

SHOW YOUR ADDRESS ON CORRESPONDENCE

When writing to us for any reason, please show your complete address on your letter. Envelopes occasionally become separated from correspondence, and we cannot always locate your address in our files. As a result, some letters may be delayed, or unanswered.

STOPPING BY FOR FACTORY SERVICE?

If you have a Heathkit that needs servicing, and you would like to drop it off at our plant, our Service Department is open Monday thru Friday, 8 A.M. to 4:15 P.M. E.S.T. If you can't make it during the week, you may leave it with our Sales Representative on Saturdays at our plant Kit Sales/Show Room, which is open 9 A.M. to 3:30 P.M. We suggest that a written description of the problem be attached to the unit—*be sure* to include date kit was purchased. Repaired equipment & replacement parts can also be picked up at the Kit Sales Room on Saturdays, *only* if prior arrangements are made with the Service Department. Be sure that all arrangements are clearly understood.

Also, don't forget about the Heathkit Electronic Center and authorized Service Center facilities (see list below). They are fully staffed and equipped to handle any parts or service problem . . . either by mail or across the counter. If there's one in your vicinity, take advantage of it . . . you'll receive faster attention to your needs.

JOB OPPORTUNITIES—ENGINEERS & TECHNICIANS

Due to expansion, we now have job openings in our Service and Engineering departments for technicians and engineers. We offer good salaries, liberal employee benefits, and a pleasant working atmosphere in our modern plant located on the eastern shore of Lake Michigan. Excellent school, shopping and recreational facilities. You'll live within minutes of work. If interested, write to: W. F. Donahue, Director of Personnel, Heath Company, Benton Harbor, Michigan 49022.

OFF TO MORE SHOWS WE GO!

During the months of March and April, we will exhibit various Heath products at the following special interest and trade shows. If you plan to attend any of these, be sure to stop by and see us. Personnel from the Heath Company plant will be on hand to answer your questions.

March 21-24—Institute of Electronics & Electrical Engineers (IEEE) Show at the Coliseum, New York City—all Heathkit products.

April 1-5—1966 National Science Teachers Association Convention, New York Hilton, New York City—IMPScope, Heath Berkeley Physics Lab Parts A & B, Servo-Chart Recorder, power supplies, Basic electronic courses, and "How To . . ." Instrument Application series.

April 12-15—Federation of American Society For Experimental Biology Meeting, Convention Hall, Atlantic City, New Jersey—IMPScope, new IO-14 Oscilloscope (see page 42), Polarography System, Multi-Speed Chart Drive, Malmstadt-Enke Lab, and the pH Meter.

April 21-24—1966 American Radio Relay League (ARRL) National Convention, Sheraton-Boston Hotel at the Prudential Center, Boston, Mass.—all Heathkit amateur radio gear.

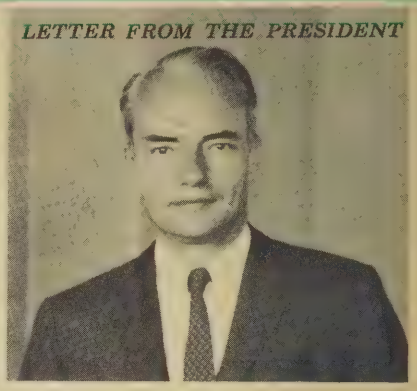
PHONE ORDER ANYTIME DAY OR NIGHT

Days, call Area 616, 983-3961
Nights, call Area 616, 983-3921
Give all information, we will ship C.O.D. After 8 P.M. call Heath from anywhere in the continental U.S. (except Alaska) for $1 or less.

DO YOU HAVE AN FCC COMMERCIAL PHONE OR TELEGRAPH LICENSE?

If you hold a current, valid FCC Commercial First Class Radiotelephone or First Class or Second Class Radiotelegraph license, we would like to hear from you. A postcard will do—just address to Neal Turner, Heath Company, Benton Harbor, Mich.—and tell him what license you hold.

LETTER FROM THE PRESIDENT



Dear Friends:

Customer good will depends on so many facets of a business that at any given time it is hard to determine from the customer mail whether we are gaining or losing in the all-important struggle for good-will. It's like the caterpillar who was asked as he stood at the door of the psychiatrist's office . . . "Are you coming or going?" Said the caterpillar "If I knew that I wouldn't be here."

For instance, in 1965 we shipped out more kits on time than ever before. We also shipped more kits late than ever before.

We were in good shape on shipments until November when a quality problem developed. A supplier notified us that some defective material might have gotten into a recent shipment to us. We had three suppliers for this particular part which is used in over 100 different kits. Which kits in our stock contained this manufacturer's component? We did not know; so we opened every kit, extracted the part, and substituted another.

Naturally, shipment was delayed on these kits and a lot of loyal customers were disappointed with Heath's delivery service. But to my knowledge, not a single one was disappointed with Heath quality. Which way did the good-will pointer move? See you at the psychiatrist's.

Sincerely,
C. M. Kirkland, President

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HEATHKIT ELECTRONIC CENTERS

Chicago, Illinois
3462-66 W. Devon Ave.
Phone: 583-3920

Denver, Colorado
2901 Sheridan Blvd.
Phone: 238-2348

Detroit, Michigan
18645 West 8 Mile Rd.
Phone: 535-6480

Anaheim, California
330 E. Ball Road
Phone: 776-9420

Los Angeles, California
2309 S. Flower Street
Phone: RI-9-0261

San Diego, California
1300 Market Street
Phone: 234-0293

Redondo Beach, California
(Marine Specialists)
202 Harbor Drive
Phone: 376-0908

AUTHORIZED SERVICE CENTERS

United Sound & Television Co. (two locations)
5036 Venice Blvd.
Los Angeles, California
&
2010 W. Lincoln Ave.
Anaheim, California

Radio Electronics
374 Brannan Street
San Francisco, California

Photo Electronics
1300 Market Street
San Diego, Calif.

Southern Authorized Factory Service
62 N. W. 27th Ave.
Miami, Florida

Expert Electronics
7201 S. Western Ave.
Chicago, Illinois

Park Armature Company
1218-30 Columbus Ave.
Boston, Mass.

Electronic Servicenter of N.Y.
65-37 Queens Blvd.
Woodside, New York

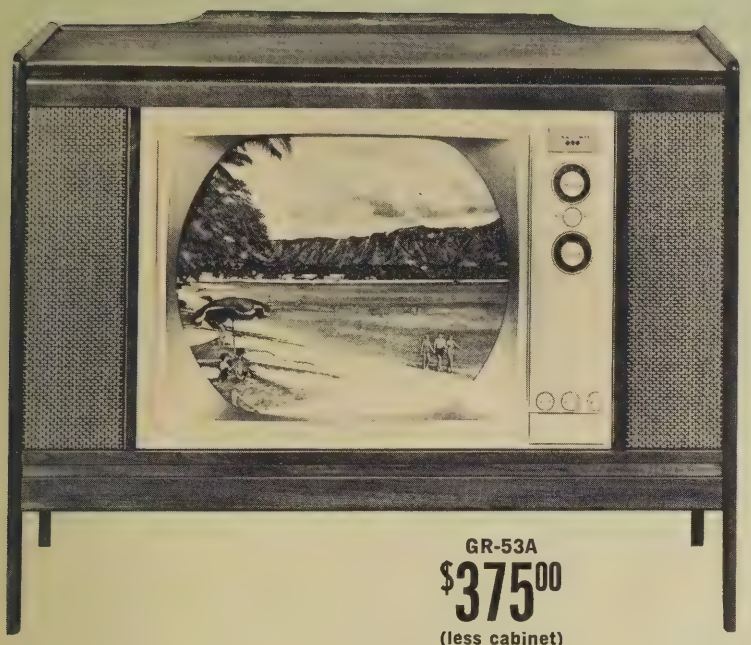
Scientific Radio-TV/Hi-Fi (two locations)
4122 E. Madison St.
Seattle, Washington
&
5418½ Sand Point Way N.E.
Seattle, Washington

All Heathkit Electronic Centers and Authorized Service Centers are units of Daystrom Products Corporation

Heath Company, Benton Harbor, Michigan—Plant Location: St. Joseph, Michigan
Affiliated Companies: Daystrom Ltd., Cooksville (Toronto) Canada • Daystrom Ltd., Gloucester, England • Heathkit Gerate GmbH., Sprendlingen Bei Frankfurt/Main, Germany • Daystrom S.A., Geneva, Switzerland • Daystrom S.A., Zurich, Switzerland • Daystrom Overseas GmbH., Vienna, Austria

Heathkit® 21" Color TV Available Now!

No Reservation Needed — Immediate Delivery!



GR-53A
$375.00
(less cabinet)

Only 21" Color TV You Can Install 3 Ways!



1. In a wall
2. In your custom cabinet
3. In either Heath factory-built cabinet

Factory Assembled Deluxe Cabinet (Opposite) . . . matches Heath contemporary hi-fi cabinetry (p. 26). Fits within 3" of wall. Quality crafted of ¾" walnut solids and veneers with a hand-rubbed finish. Includes special hi-fi 6" x 9" speaker with 6.8 oz. mag. to give you 2-speaker performance with GR-53A chassis (speakers mount behind grille cloth). Size: 44" W x 32⅜" H x 23⅝" D (26½" including tube rear cover). See below for Heath economy cabinet.

Assembled GRA-53-7, 82 lbs.
No money down, $11 month. **$108.00**

Exclusive Built-In Self-Servicing . . . Versatility Of Installation . . . Plus Hi-Fi Picture & Sound Make The GR-53A A Best Buy!

• Built-in Service Center to adjust & maintain set • 26-tube, 8-diode circuit • Deluxe Standard-Kollsman VHF tuner with "memory" fine tuning • Transistor UHF tuner • High definition 70° 21" "rare-earth" color tube for brighter reds • Anti-glare bonded safety glass • 24,000 volt regulated picture power • Automatic color control for top color quality • Gated automatic gain control for steady "flutter-free" pictures • Tuners, I.F. and high voltage assemblies factory-built & aligned . . . just simple circuit boards to wire • Line Thermistor for longer tube life • Tubes alone list for over $260 • Transformer operated • Circuit breaker protection • Two hi-fi outputs plus tone control • One-piece metal chassis support for easy set-up & servicing • Mounts in wall, custom cabinet or either Heath cabinet • 1 year warranty on picture tube, 90 days on all other parts

Ends Costly Color TV Servicing . . . a built-in dot generator coupled with a convergence control center allows you to adjust the set yourself for the finest picture at all times. Simple-to-follow instructions and detailed color photos show you exactly what to look for and how to achieve it. No more color fringing or overlap. No more service calls everytime you move the set.

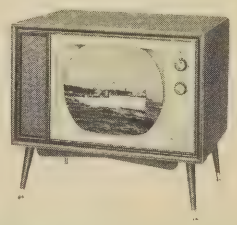
As Easy To Build As A Hi-Fi Amplifier . . . you simply wire 3 circuit boards, mount the parts, connect a color-coded wiring harness, and adjust the picture . . . all critical circuits are pre-assembled and aligned at the factory. You'll finish in about 25 hours. Result? 21" of the best color pictures on TV, plus true hi-fi sound. Install it in a wall, your own cabinet, or either Heath cabinets. The picture tube is warranted for a year, all other parts 90 days.

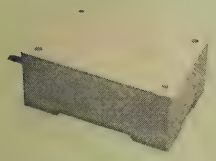
Kit GR-53A, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and specially shielded, extended range 6" x 9" speaker. 125 lbs. . . $38 dn., as low as $22 mo. **$375.00**

GR-53A SPECIFICATIONS—Picture size: 21" round, approx. 265 sq. in. **Deflection:** Magnetic 70°. **Focus:** Electro-static. **Convergence:** Magnetic. **Antenna input impedance:** 300 ohm balanced. **Picture IF carrier frequency:** 45.75 mc. **Sound IF carrier frequency:** 41.25 mc. **Color sub-carrier:** 42.17 mc. **Sound IF frequency:** 4.5 mc. **Tuning range:** VHF TV Channels 2-13, UHF 14-83. **Sound cathode follower:** Output impedance; 3K. Frequency response: ±1 db, 50-15,000 cps. Harmonic distortion: less than 1%. Output voltage: 2 V. **Audio output:** Output impedance: 8 ohms. Output power: 2 watts. Frequency response: ±2 db, 50-15,000 cps. Harmonic distortion: Less than 3%. **Power requirements:** 110 V to 130 V, 60 cycle AC, 300 watts. **Wall mounting space required:** 25" D x 25" H x 28" W.

Economy Cabinet . . . Only $46.50!

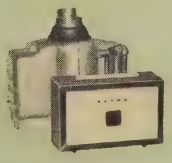
Attractive, low cost. Constructed of walnut-finished wood and hardboard; tapered wood legs with brass finish ferrules and glides. GR-54A's speaker mounts behind grille cloth on left of cabinet. Cabinet size: 37¾" W x 33¼" H x 26¼" D.
GRA-53-6, 51 lbs. . . no money dn., $5 mo. **$46.50**





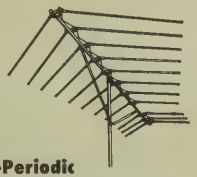
Performance-Proven Transistorized Blonder-Tongue FM/TV Booster (IT-4) For Fringe Areas

Dependable, trouble-free signal booster. Accepts up to four FM and TV sets simultaneously. 300 ohm input and output. Easy to install. 1⅝" x 2⅞" x 4".
GDP-331, 1 lb. . Only **$19.40**



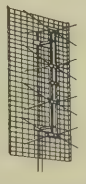
New! Alliance Tenna-Rotor . . . Save $16.50

New patented 5-wire bridge type circuit . . . unaffected by motor current, cable length or line voltage variations. Expanded meter scale. Rotates 360° either direction—instantly reversible. Magnetic brake. Lubricated for life. Moisture sealed, 115v AC, 60 cycle.
GDP-214, 11 lbs. **$23.45**



JFD Log-Periodic LPV-11 VHF TV Antenna!

Receives color, B & W TV (channels 2 thru 13), FM Stereo up to 125 miles away! Patented geometric concept for higher forward gain, sharper directivity, lower VSWR—down to 1.2 to 1, a front-to-back ratio of 35 db, Gold Bond Anodized finish. 11 V-elements!
GDP-124, 15 lbs. Mftrs. list $39.95 . . . . . Only **$23.45**



Taco 4-Bay Model 3044 TV Bow-Tie UHF Antenna

Popular open vee type with pivot mount for rigid locking to existing mast; heavy mesh screen reflector of galvanized 12 gauge steel with 1" x 1½" squares for max. stability and long life.
GDP-233, 5 lbs. Mftrs. list $8.75 . . . . . Net **$5.14**



Blonder-Tongue BTX-99A All-Transistor UHF Converter

Adds all UHF channels 14 to 83 to any TV. Ideal for prime signal areas. Performs well with indoor antenna in many areas. All-transistor circuit provides maximum signal power, and drift-free no-distortion performance. UL approved. Not a kit.
Model GDP-595, 2 lbs. **$19.45**

Your Best 25" Color TV Buy!



Only 25" Color TV You Can Install 3 Ways!

1. In a Wall
2. In Your Own Custom Cabinet
3. In Heath Factory-Built Cabinet



GR-25
$469.95
(less cabinet)

Space-Saving Rectangular Tube Provides More Picture Area . . . Has "Rare Earth" Phosphor For Livelier Colors . . . And You Can Converge It Anytime For Peak Performance!

• Hi-fi 90° rectangular 25" color tube with anti-glare safety glass and "rare earth" phosphor for better "reds," brighter pictures • 27-tube, 10-diode circuit • 25,000 volt regulated picture power • Automatic degaussing & mobile degaussing coil • Exclusive Heath "Magna-shield" covers entire tube for improved color purity • Built-in servicing facilities to adjust & maintain set • Extra B+ boost for improved picture definition • Dynamic pin-cushioning correction circuit eliminates picture edge distortion • Deluxe VHF turret tuner with "memory fine tuning" & long-life nickel silver contacts • 2-speed, transistor UHF tuner • Automatic color control circuit to reduce color fading • New 3-stage IF strip to reduce interference & improve reception • Gated automatic gain control for steady, flutter-free pictures • Circuit breaker protection • New vertical swing-out chassis for easier servicing & installation • 3-way installation . . . wall, custom cabinet or Heath factory-assembled cabinet • Assembles in just 25 hours with all critical circuits prewired & tested • 1-year warranty on picture tube, 90 days on all other parts

Features Exclusive Built-In Servicing, Automatic Degaussing And Other Color TV Advances For True Hi-Fi Picture & Sound—Compare!

No Cut-Off Corners, No Picture Loss . . . you see the complete picture with a full 295 sq. inches of viewing area . . . yet its rectangular shape takes less space in a cabinet or wall installation. A special "rare earth" phosphor insures brighter, more brilliant colors . . . a 25,000 volt regulated power supply assures a sharp, clear picture . . . and the anti-glare safety glass protects its "good-looking" face.

Picture Tube Is Demagnetized And "Cleaned" everytime you turn the set on from a cold start . . . thanks to the Automatic Degaussing Circuit. Also eliminates any manual degaussing when set is moved. A mobile degaussing coil is included for initial set-up and adjustment.

Exclusive Heath Magna-Shield . . . maintains color purity by shielding entire tube from external magnetic fields.

Higher Resolution, Improved Definition, And Brighter Pictures . . . thanks to the Extra B+ Boost which accelerates electron beams for a smaller spot size.

Straight Picture Edges With No Distortion . . . no more "waves" or contorted corners . . . two pincushion transformers with associated correction circuits assure you of straight vertical and horizontal lines.

2-Speed, Transistor UHF Tuner . . . has high vernier ratio for either fast channel selection of all UHF channels or fine tuning of individual stations.

Deluxe VHF Turret Tuner . . . with "memory" fine tuning . . . no need to readjust when you return to a channel. Long-life silver contacts assure positive switch action. Both channel indicators are lighted for easy reading.

3-Stage Video IF Strip . . . reduces interference and improves definition.

Vertical Swing-Out Chassis . . . hinged to make components more accessible (see illus. right).

Two VHF Antenna Inputs . . . Choose either 300 ohm balanced or 75 ohm coax input to reduce interference in metropolitan or CATV areas.

Tilt-Out, Front-Panel Convergence Controls . . . cabinet speaker grille tilts out to make dynamic convergence easier (see illust. right). No more reaching around the set, or mirrors to set up.

Main Control Panel . . . all tuning controls mount on universal panel for versatile custom installation . . . mounts above, below or to the right of the picture tube, wherever you prefer.

Hi-Fi Sound Outputs . . . accommodate special contained-field 6" x 9" speaker (included). Also has cathode follower output to drive your hi-fi system.

25" COLOR TV ON RESERVATION BASIS ONLY!
Demand continues to exceed our tube allocation. To reserve your GR-25 for future delivery, use separate order blank (center of flyer) mark "GR-25 Reservation Only", and return to us. We will promptly acknowledge your reservation and assign a priority number. We will contact you in advance of shipping date to confirm your reservation.

Color Fading Is Reduced . . . thanks to the Automatic Color Control Circuit . . . you always have the best picture.

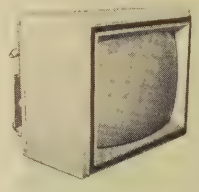
Steady, Jitter-Free Pictures, Even In High Interference Areas . . . Gated Automatic Gain Control provides a balanced picture, even under fast-changing signal conditions, such as airplanes flying over your reception area. A color-killer circuit cuts off color signals when a black & white picture is being received.

No Costly Service Calls For Picture Adjustments Or Simple Repairs . . . built-in servicing facilities include a dot generator to converge set any time. Full color illustrations and simple instructions show you exactly what to look for and how to achieve it.

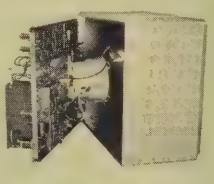
3-Way Installation . . . install the GR-25 in a wall or custom cabinet . . . required dimensions: 20" D x 21" H x 26" W. Or choose the factory assembled, walnut finish Heath cabinet (above).

Kit GR-25, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit and special extended-range 6" x 9" speaker, 131 lbs. . . . $47 dn., as low as $29 mo. **$469.95**
Assembled GRA-25-1, low-cost walnut cabinet, 35 lbs. . . . no money dn., $6 mo. **$59.95**

GR-25 SPECIFICATIONS—Picture size: 25", rectangular, approx. 295 sq. inches. **Deflection:** Magnetic 90°. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna input impedance:** 300 ohm balanced, or 75 ohm unbalanced (VHF). **Picture IF carrier frequency:** 45.75 mc. **Sound IF carrier frequency:** 41.25 mc. **Color subcarrier:** 42.17 mc. **Video IF bandpass:** 3.58 mc. **Sound IF frequency:** 4.5 mc. **Tuning range:** VHF channels 2-13, UHF channels 14.82. **Sound cathode follower:** Output impedance; 3 K. Frequency response; ±1 db, 50-15,000 cps. Harmonic distortion, less than 1%. Output voltage; 2 v. **Audio output:** Output impedance, 8 ohms. Output power, 2 watts. Frequency response, ±2 db, 50-15,000 cps. Harmonic distortion, less than 3%. **Power requirements:** 110-130 v., 60 cycle AC, 330 watts. **Wall mounting:** 20" D x 21" H x 26" W inside. Control panel, assembly, 6½" W. x 7⅞" H. x 7" D.



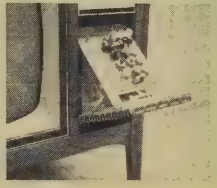
Exclusive Heath Magna-Shield! Keeps out external magnetic fields and improves color purity by covering entire tube.



Vertical Swing-Out Chassis! Makes chassis more accessible for servicing and installation.



Universal Main Control Panel! Contains all main controls for more flexible custom installation . . . top, bottom or right side.



Convergence Control Panel! Front-panel mounted under "tilt-out" speaker grille section for easier, faster picture convergence.

Home Entertainers



GD-983
$799.00
(Including bench)

Enjoy Full Professional Organ Features Like Chimes, Rotating Leslie Speaker, and Full-Size 44-Note Keyboards With This Deluxe Heathkit®/Thomas "Coronado" BL-3!

• All genuine Thomas factory-fabricated components • 17 beautiful, rich organ voices • Two full-size 44-note keyboards • A built-in 2-speed Leslie plus 2-unit Main speaker system • 28 notes of melodious chimes . . . hundreds of chime variations • 13-note heel & toe pedalboard, range C thru C • Reverb for concert hall realism • Sustain on keyboards & pedals for a variety of special effects • Vibrato for warmth & beauty • New Stereo Chorus Control to create exciting "stereo" effects • Color-tone Attack & Repeat Percussion to produce additional voice effects • Treble Accent for added brilliance • Manual Balance to adjust relative volume of the two keyboards • Pedal Volume to adjust bass pedal loudness • Headset outlet to play without disturbing others • A full 5-year warranty on transistor tone generator boards . . . the heart of the organ • Luxurious full-bodied walnut finished cabinet . . . hand-crafted, hand-rubbed, completely assembled • Diode switching on upper keyboard . . . faithfully reproduces attack and decay of each musical tone with no annoying key "clicks"

Just Touch A Tab! And create any one of 17 beautiful organ voices . . . Saxophone 8′, French Horn 8′, Violin 8′, English Horn 8′, Oboe 8′, Flute 8′, Cello 8′, Bass Clarinet 16′, Trumpet 16′, Bourdon 16′, Flute D'amour 4′, Quint 5⅓′, and Diapason 16′ and 8′. And you'll soon learn various combinations to produce additional voices such as the hawaiian guitar, vibraharp, harpsichord, zither, caliope, bagpipes, etc. Plus different musical moods . . . classical, popular and religious. It's like having an orchestra at your fingertips. The 28 notes of chimes—worth $500 to $2000 as an extra on other organs—offer hundreds of variations. And with the 2-speed rotating Leslie speaker, you create the beauty of a full "theatre" organ, or a rich, random liturgical sound.

As **High Fidelity** Magazine put it: "*—this 'kit organ' is no toy or halfway-to-heaven gadget. It is rather a full-fledged, deep throated, authentic sounding organ that should interest the serious musician as well as the hobbyist and amateur.*"

No Extras, Nothing More To Buy! There are *no* speakers, amplifiers, or other "hidden necessities" to add as with other organ kits. Even includes a pre-tuned generator to tune it . . . no special "ear" needed. And what about kit assembly? **Popular Science** Magazine wrote: *"You don't have to be an expert or know anything about electronics to complete the project . . . Heath engineers have done an excellent job of programming the assembly so that you are never confused."*

Kit GD-983, Organ & matching walnut bench, 245 lbs. . . .
$125 dn., as low as $27 mo. **$799.00**

Self-Teacher Recorded Lessons . . . Save $30!

Complete 48-lesson course on four 12″ LP records, and music book with many old-time favorites. Use with GD-983 or new GD-325 (pg. 6) organs.
GDA-232-2, recorded lessons, 5 lbs. . . . Mftrs. list $50. . . . . **$19.95**

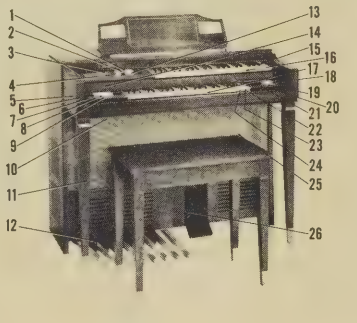
5-Year Warranty!

The transistorized plug-in tone generator boards, the heart of the organ, are warranted for five years. You buy with confidence when you buy a Heathkit version of the Thomas Organ. Replacement upon prepaid return of undamaged board to the Heath Company.

Like To Hear It Perform?

Send 50c for postage & handling, ask for 7″, 33⅓ rpm demonstration record no. GDA-983-2. You'll convince yourself!

1. Sustain Tab **2.** Reverb **3.** Swell Keyboard Voices **4.** On-Off And Pedal Volume **5.** Pedal Tab **6.** Pedal Sustain Tab **7.** Great Keyboard Voices **8.** Vibrato Tab **9.** Treble Accent Tab **10.** Headphone Jack **11.** Leslie Speaker **12.** Pedalboard **13.** Manual Balance **14.** Pilot Light **15.** Chimes **16.** Swell Keyboard **17.** Great Keyboard **18.** Leslie Rotor Switch **19.** Leslie-Main Speaker Tab **20.** Stereo Chorus **21.** Color-Tone Percussion Tabs **22.** Percussion Repeat Rate **23.** Percussion Delay Tabs **24.** Repeat Percussion Tab **25.** Main Speakers **26.** Expression Pedal



Thomas Organ Music Books

Contains complete organ music & registration charts for both GD-983 and GD-325 Heathkit/Thomas Organs.

HELLO DOLLY . . . all words and music from this famous musical.
GDP-165, 1 lb. **$2.00**
BERLIN'S BEST . . . "Always," "Say It Isn't So," 23 Berlin favorites.
GDP-135, 2 lbs. **$2.50**
AROUND THE WORLD IN WALTZTIME . . . 14 waltz favorites, "Fascination," "My Wild Irish Rose," etc. . . .
GDP-155, 1 lb. **$2.00**
LIGHT CLASSICS . . . "Serenade," "The Swan," 12 popular classics.
GDP-145, 1 lb. **$2.00**

For A Picture As Sharp As A Photograph, And Sound As Clear As An FM Tuner, Choose This Deluxe 23″ Black & White TV!



GR-22A
$169.00
(less cabinet, mask & speaker)

• UHF & VHF for all-channel (2-83) reception • 16 tubes, 5 diodes give 30 tube performance • 20,000 volt picture power • High definition 23″ 90° tube with anti-glare bonded safety glass • Spark-gap socket for picture tube protection • Deluxe Nuvistor VHF & transistor UHF tuners • Transformer power supply • Line circuit breaker, filament and B+ protection • Gated Automatic Gain Control & Noise Canceller for peak reception • Wide-band circuitry with 5 interference traps • DC restorer • Hi-Fi cathode follower output for hi-fi system • Hi-Fi sound-power output for speaker • Finest parts—tubes alone list over $135 • Easy circuit construction, wiring harness, and prebuilt tuner, IF strip and hi-voltage sections . . . finish in 12 hours.

Install In A Wall Or Cabinet! Choose the chassis & tubes, and the custom wall mask (GRA-22-5 right) for mounting in either a custom cabinet or wall. Or choose the handsome Heath walnut cabinet (Illust.) that blends with today's decor.

Kit GR-22A, chassis & tubes, 77 lbs. . . .
no money dn., $16 mo. **$169.00**

TV Wall & Cabinet Mask

Unfinished. Includes ¾″ mounting board. Cut & drilled. Required mounting space; 19″ H x 17¾″ D x 28⅛″ W.

GRA-22-5, TV wall mount, 13 lbs. **$23.50**
GR-62B, TV set with wall mount, 90 lbs. . . .
Save $7.50 . . . no money dn., $18 mo. **$185.00**

Deluxe TV Cabinet

(Illust.) Assembled. Walnut finish matches Heath Hi-Fi cabinets, pg. 28. Includes mask, mounting board, 6″ x 9″ speaker. Measures: 36″ W x 32⅜″ H x 20½″ D.

GRA-22-1, Walnut TV cabinet, 65 lbs. . . .
no money dn., $9 mo. **$84.95**
GR-52A, TV set & walnut cabinet, 142 lbs. . . .
Save $8.95, no money dn., $23 mo. **$245.00**

GR-22A SPECIFICATIONS—Picture size: 23″ overall diagonal, approximately 282 sq. in. **Deflection:** Magnetic, 90°. **Focus:** Electrostatic. **Antenna input impedance:** 300 ohm balanced. **Tuning range:** VHF TV Channels 2-13 & UHF Channels 14-83. **Picture IF carrier frequency:** 45.75 mc. **Sound IF carrier frequency:** 41.25 mc. **Sound IF:** 4.5 mc. **Video response:** to 3.2 mc. **Power requirements:** 105 V. to 125 V. 60 cycles AC, 210 watts.

How To Play Complete Songs In Minutes Instead of Months. Build The New Heathkit® / Thomas Color-Glo Organ!

Play Melody, Harmony, And Bass The First Time You Try It . . .
Even If You've Never Played An Instrument Before!

• Exclusive Thomas Color-Glo to start you playing instantly • All genuine Thomas factory-fabricated components • 10 true organ voices • Variable repeat percussion . . . produces banjo, mandolin, balalaika effects • 13-note heel and toe bass pedals • 2 overhanging 37-note keyboards, range C thru C • 50 watt EIA peak music power amplifier • 12″ speaker • Vibrato • Manual balance control • Transistorized plug-in tone generators, the heart of the organ, warranted for 5 years • Fully transistorized for better tone, longer life, trouble-free operation • Handcrafted, hand-rubbed walnut cabinet . . . completely assembled



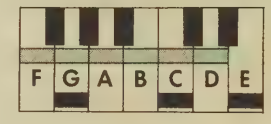
GD-325
$349.95
(less bench)

No Long, Tedious Hours of Study Needed! You and every member of your family start playing many of your favorites instantly . . . with this new Color-Glo version of the Heathkit/Thomas "Artiste" ART-1 Organ. Special key lights show you the correct notes and chords.

Just Match Up The Colors And The Letters . . . It's Easy! Switch on the Color-Glo, and you're ready to play. Each key on the upper keyboard lights up with a letter for you to follow. You simply match the letters on the music with the letters on the keys, and automatically you play the melody. For harmony, there are 3 red keys, 3 black keys and 3 green keys on the lower keyboard. With your left hand, just press and hold the notes that match the background color in the Thomas Color-Glo music book (included).

But that's not all. To add the rich sound of the bass notes, press and hold the pedal that is marked with the same color as the harmony notes, changing to different colors as you change with your left hand. That's all there is to it . . . and you've done it all by yourself.

Touch the magic switch again, and the Color-Glo keys disappear, leaving a beautiful spinet organ console that will be the most admired piece of furniture in your living room. Your Color-Glo music teacher is your secret!



Keys Light Up To Show You Correct Notes & Chords. Thanks to exclusive Color-Glo, you and every member of your family can play melody, harmony and bass notes instantly. Just match up the colors with your left hand, the letters with your right hand . . . and you play complete songs . . . even if you've never played an organ before!

Great For Livening Up Parties! Create live music for dancing and song fests when friends gather for an evening . . . you're a one-man band. And there's no better way to relax. Teens will love the rhythm and bounce of its many musical effects, too. Ten true organ voices in all . . . trombone, reed, flute, oboe, cornet, violin, saxophone, horn, viola, and diapason. All at the simple touch of a tab. Also includes repeat percussion to create banjo and mandolin effects; 13-note heel and toe bass pedals; variable expression pedal to change the volume; two levels of vibrato intensity; variable bass pedal volume; manual balance control; 12″ speaker; and a 50-watt EIA peak music power amplifier.

Build It In About 50 Hours! Takes no special skills or knowledge. Includes simple step-by-step instructions . . . genuine Thomas factory fabricated parts . . . diagrammed, easy-to-wire circuit boards . . . factory assembled hand-rubbed walnut cabinet (measures 41¼″ H x 39¾″ W x 21½″ D) that's ready for the sub-assemblies as you complete them. You even tune the organ with the pre-tuned tone generator . . . no "special" ear needed. Then relax and enjoy your newly discovered talent as you take the "light approach" to music . . . with instant-play Color Glo!

Kit GD-325, Organ, 153 lbs. . . $35 dn., as low as $21 mo. **$349.95**
GDA-232-1, matching walnut bench, 18 lbs. . . no money dn., $5 mo **$24.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Hear It Perform!
Send 50c for postage & handling, and ask for model GDA-232-5, demonstration record (7″, 33⅓ rpm).

Special Note To GD-232 (A & B) Organ Owners!

As much as we'd like to, it is **not** possible to offer a Color-Glo conversion kit because of extensive differences in cabinet structure between the GD-232 models and the new GD-325.



Additional Thomas Color-Glo Music Books

Color-Glo Music Book No. 2 . . . contains words, music and "color-coded" charts for 56 favorites . . . "Beautiful Brown Eyes," "Camptown Races," "Home On The Range," "Joy To The World," "Goodnight Ladies."
GDP-355, 1 lb. **$2.50**

Color-Glo Music Book No. 3 . . . contains words, music and "color-coded" charts for 60 favorites . . . "Away In A Manger," "Bill Bailey," "Glow Worm," "How Dry I Am," "My Darling Clementine," etc.
GDP-365, 1 lb. **$2.50**

Color-Glo Organ Course, Vol. I . . . contains sections on using Color-Glo, legato, stop tabs, manual balance control, percussion, plus 22 song favorites.
GDP-375, 1 lb. **$2.50**

Color-Glo Supplementary Song Book . . . with words, music, "color-coded" charts for 55 songs . . . "Billy Boy," "God Be With You Till We Meet Again," "Old Soldiers Never Die," "Wait For The Wagon," etc.
GDP-385, 1 lb. **$2.50**

Deluxe "Go-Anywhere" Shortwave Portables!

HEATHKIT

Get The Finest In Portable Listening . . . Choose This 10-Band Transistor AM/FM/Shortwave Radio!

• 10 bands tune Longwave, Standard Broadcast, FM and 2 mc.-22.5 mc. Shortwave Bands • 16 transistors, 6 diodes and 44 factory assembled and pretuned circuits • Two separate AM & FM tuners and IF strips • Two built-in antennas • Battery saver switch cuts current drain up to 35% • Rotating tuning dial • Dial light • Four simple controls for tuning, volume, tone, AFC and band switching • 4" x 6" PM speaker • Earphone & built-in jack • Optional converter/charger available • Time zone map & "listener's guide"



GR-43
$159.95

An Entertaining Companion Wherever You Go. That's the new GR-43. Keeps you informed of the latest happenings on its 550-1600 kc AM band with a tuning sharpness that brings in stations you've never heard before. Its 88-108 mc FM band offers you the quiet beauty of truly fidelity music, thanks to the same tuner and IF strip as used in deluxe Heathkit FM stereo components. For drama and unique listening, its 7 shortwave bands cover the 2-22.5 mc spectrum to bring you thousands of foreign broadcasts, ships at sea, amateur radio operators, weather stations, etc.

16 Transistors, 6 Diodes, 44 Factory-Built & Aligned RF Circuits . . . your assurance of instant, heat-free operation; superior performance; and easy 10-hour assembly. Two separate AM and FM tuners are factory assembled, ready to mount into place . . . eliminates the need for alignment, insures peak performance, and speeds assembly.

Two Built-In Antennas . . . a large ferrite rod neatly housed in the easy-carry handle for AM and longwave. And a 5' telescoping whip that tilts for best FM and shortwave reception. Also has connectors for external AM and FM antennas.

Versatile Controls Offer Added Convenience! Like the Battery-Saver switch that reduces battery drain up to 35% for normal indoor listening, or provides full power for extra strong reception outdoors. A 10-position selector directly drives the rotating turret dial . . . permits easy viewing of any band (a logging scale aids in relocating unknown frequencies). There's a Dial Light switch for nighttime use; Automatic Frequency Control with on-off switch for drift-free FM; an 8½ revolution Tuning knob easily separates stations; a combination on-off switch and tone control for listening as you like it.

Big 4" X 6" PM Speaker, specially designed to match cabinet acoustics, provides "big-set" sound. Also includes an earphone that plugs into a built-in jack for private listening.

Inexpensive, Flashlight Battery Power. 6 "D" batteries power the radio, and 1 "C" battery operates the dial light (batteries not included). Also operates on 117v. AC as it "float" charges its batteries with an optional converter/charger (see opposite).

Deluxe Styling Matches Deluxe Performance. Jet black extruded aluminum front and back panels contrast beautifully with the chrome-plated, die-cast end pieces. Both panels are hinged . . . open and close easily thanks to special magnetic edges . . . no cumbersome latches or snaps. The front panel can be removed to take less space when used at home. Inside the front panel, you'll find a "listener's guide" with frequencies of worldwide shortwave and U.S. FM stations . . . travels snugly in its own special slot. In addition, there's a special map for easy conversion of world time zones.

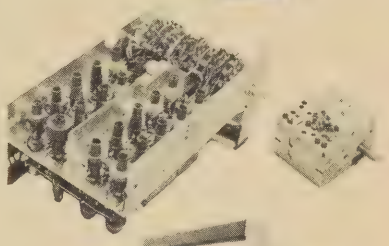
Kit GR-43, 19 lbs. . . no money dn., $15 mo. **$159.95**
Model GRA-43-1, Converter/Charger for 117 v. AC, 1 lb. **$6.95**

GR-43 SPECIFICATIONS—AM SECTION: Tuning range: Long wave—150-400 kc; Broadcast—550-1600 kc; 2-4 MC—2-4 mc; 4-9 MC—4-9 mc; 31 M—9.2-10.2 mc; 25 M—11.2-12.4 mc; 19 M—14.5-16.1 mc; 16 M—16.8-18.8 mc; 13 M—20.2-22.5 mc. **Sensitivity:** at External Antenna Input for a 10 db signal-plus-noise to noise ratio. Long Wave—12 uv; Broadcast—10 uv; 2-4 MC—5 uv; 4-9 MC—3 uv; 31 M—3 uv; 25 M—2 uv; 19 M—2 uv; 16 M—2 uv; 13 M—2 uv. **Intermediate frequency (IF):** 455 kc. **FM SECTION:** Tuning range: 88-108 mc. **Sensitivity:** 1½ uv for 20 db of quieting; 2 uv for 30 db of quieting; 3 uv for 40 db of quieting. **Intermediate frequency (IF):** 10.7 mc. **GENERAL: Audio output:** Normal: 500 mw; Battery Saver: 160 mv. **Speaker:** 4" x 6" oval; permanent magnet; 3.2 ohm voice coil impedance. **Batteries:** 6—size D cells; 1—size C cell. **Dimensions:** 13½" W x 5⅛" D x 10⅜" H, including handle.

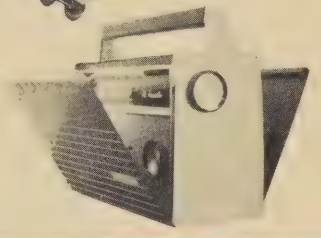
Optional Charger/Converter . . . to operate on 117 v. AC. Plugs into built-in jack to "float-charge" batteries while you enjoy good listening without battery drain. Priced at only $6.95.



Separate AM & FM Tuners —44 R.F. Circuits . . . all factory assembled and aligned to assure finest performance and fast, easy assembly. Just mount entire section in place, and wire 3 small circuit boards.



Convenient! Both front & back panels are hinged . . . close and open easily thanks to special magnetic edges. In addition, the front cover can be completely removed to take less space when in use at home.



1966 World Radio TV Handbook

World recognized authority for information on international radio, TV and tele-communications. Contains a list of all AM, FM, TV and Shortwave broadcasting stations . . . includes call signs, frequencies, transmitter power, address for QSL cards, program details, broadcast times, and hundreds of other items important to the shortwave listener. 300 pages.
GDP-315, 2 lb. **$4.95**



GC-1A
$89.50

Enjoy The Good Companionship Of A "Mohican" Portable SWL Receiver!

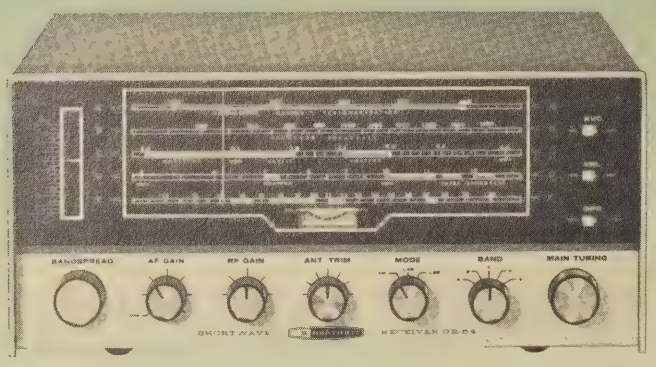
• Powerful 10 transistor, 6-diode circuit • Tunes 550 kc to 32 mc in five bands • Fixed-aligned ceramic IF "transfilters" for best selectivity • Completely self-contained for portability, yet can operate on 117 V. AC with XP-2 accessory below

Handsome, Compact, Ready To Go Anywhere! In addition to the features above, the GC-1A has Zener diode voltage regulation . . . smooth, easy flywheel tuning . . . built-in 4" x 6" speaker . . . panel tuning meter for precision tuning . . . 50" telescopic whip antenna . . . headphone jack for private listening . . . large, slide-rule dial for accurate station selection. Less batteries. Requires RF generator for final alignment.

Kit GC-1A, 18 lbs. . . no money dn., $9 mo. **$89.50**
Kit XP-2, 117 v. AC plug-in power supply, 2 lbs. **$9.95**

GC-1A SPECIFICATIONS—IF Frequency: 455 kc. **Frequency coverage:** 550 kc to 32 mc in 5 bands with calibrated bandspread scales (oscillator tuning) for 80, 40, 20, 15 and 10 meter amateur bands and 11 meter citizens bands. **Selectivity:** 3 kc wide at 6 db down. **Sensitivity:** 10 uv broadcast band, 2 uv shortwave bands for 10 db signal-to-noise ratio. **Output:** 400 milliwatts max. **Battery life:** Up to 400 hours normal intermittent service using 8 standard size "C" cells. **Dimensions:** 6⅞" H x 12" W x 10" D.

Low Cost World Cruise . . . On Shortwave Radio!



*Offer expires May 31, 1966.

GR-54 **$84.95**

FREE . . . Accessories For Complete Shortwave System . . . $12 Value!



Headphones!



SWL Station Guide!



Shortwave Antenna!

• 5 bands . . . 3 shortwave bands cover 2 mc to 30 mc, plus 550 kc to 1550 kc AM broadcast band, & 180 kc to 420 kc aeronautical & radio navigation band • Tuned RF stage for greater sensitivity • Half lattice crystal filter for sharp selectivity • Separate product detector for efficient SSB & CW reception • Switchable upper or lower sideband mode position • Built-in relative signal strength indicator • Electrical band-spread tuning • 6 tube—6 diode superhet circuit plus 2 silicon diode rectifiers • Built-in code practice monitor plus code key jack • Automatic noise limiter, automatic volume control & antenna trimmer control • "Velvet-touch" 20 revolution main tuning • Built-in 4" x 6" PM speaker • Built-in AM antenna plus external antenna terminals • Standard jack accepts headphones or external speaker • Safe transformer-operated power supply

GR-54 SPECIFICATIONS— Frequency Coverage: Band A 180 kc to 420 kc; Band B 550 kc to 1550 kc; Band C 2 mc to 5 mc; Band D 5 mc to 12.5 mc; Band E 12.5 mc to 30 mc. **Sensitivity:** AM: Band A 1.6 uv; Band B 8 uv; Band C 1 uv; Band D 1.2 uv; Band E 6 uv. SSB/CW: Band A 0.7 uv; Band C 0.4 uv; Band D 0.5 uv; Band E 4 uv. Signal Level for 10 db, signal plus noise to noise ratio. **Selectivity:** Half lattice crystal filter; 3 kc minimum at —6 db; 7.5 kc maximum at —20 db. **Intermediate frequency:** 1682 kc. **Antenna input impedance:** 50 ohms nominal—phono connector. **Power requirements:** 120 volts 50/60 cps AC, 45 watts. **Controls:** Bandspread, AF Gain/off-on switch; RF Gain; Ant. trim; Mode switch; Band switch; Main tuning; AVC switch; ANL switch; OPR switch; Meter adjust. **Audio output impedance:** 8 ohms nominal. **Meter:** Indicates relative signal strength. **Speaker:** Built-in 4" x 6" permanent magnet. **Standard jack:** Accepts 8 ohm ext. speaker, or headphones (50 ohm to 10 K ohm). **Dimensions:** 14⅝" W x 6-5/16" H x 10-15/16" D.

FREE Shortwave Headphones, SWL Book, Antenna . . .When You Buy This Heathkit GR-54 Now!*

Free . . . All Accessories For A Complete Shortwave System! A Superex Headphone (opposite) for "DX-ing" and private listening, 1966 World Radio TV Handbook that lists all AM, FM, TV and Shortwave stations (see pg. 7), plus a 75' shortwave antenna . . . a $12 value . . . are yours free when you order the GR-54 before May 31!

Deluxe Features For Superb Shortwave Reception. Like the half-lattice crystal filter for razor sharp selectivity; tuned RF stage; a separate diode detector for efficient SSB & CW listening, plus a diode AM detector; a switchable BFO control for upper and lower sideband tuning . . . eliminates "trial & error" SSB tuning.

For Added Savings, You Build & Align The "Front-End" Tuner . . . with or *without* instruments . . . and get factory-assembled results. Thanks to a unique bandswitch assembly, you align the coils by using the signal strength meter for adjustment readings.

Kit GR-54, 24 lbs. . . no money dn., $9 mo. **$84.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

New! Superex Shortwave Headset Free With Heathkit GR-54*

For "DX-ing" and Private Listening Convenience! Ideal for use with all Heathkit Shortwave (except GR-43) and amateur communication receivers. Provides loud volume where other phones whisper. Features high sensitivity, single lead convenience, comfortable vinyl-covered headband (1⅛" wide), dual coils, Alnico V magnets, and 2000 ohm impedance. Feather-weight. Not a kit.

GD-396, 1 lb **$5.58**

Explore The Exciting World Of Shortwave With This Low Cost Receiver!

• Covers 550 kc to 30 mc—includes broadcast plus 3 shortwave bands • 4-tube superhet circuit plus 2 silicon rectifiers • Built-in 5" PM round speaker • Illuminated 7" slide-rule dial with logging scale • Lighted bandspread tuning dial • Relative signal strength indicator • Variable BFO control • Built-in AM rod antenna • Simple circuit board construction • Headphone jack • Charcoal gray metal cabinet, black panel with green & white markings

Travel To Far-Away Places With Just A Twirl Of A Dial! Intrigue runs high as you tune live broadcasts from the Congo, Ecuador, Japan, Holland . . . hundreds of foreign countries. Your curiosity heightens as you pick up ham operators, ship-to-shore radio, Voice of America, Radio Moscow, etc. Then come home again, and get local news, weather and sports on the popular AM band!

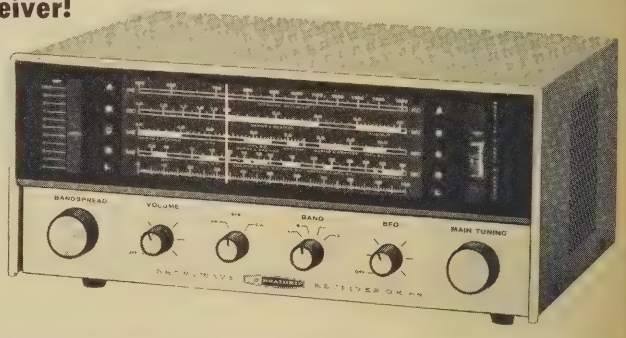
Advanced Features Insure Solid Reception, Easy Operation! A high voltage, transformer-operated power supply insures safety and peak efficiency; a BFO control "unscrambles" code & SSB; a 16-revolution tuning knob makes dialing smooth & effortless; an electrical bandspread maximizes station separation; and there's even a headphone jack for private listening. The back panel has terminals for an external antenna, a Q-multiplier input (see GD-125 opposite) and a noise limiter on/off switch. Assembly takes 8 to 10 hours.

Kit GR-64, 15 lbs. . . No money down, $5 mo. **$37.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Shortwave Antenna Kit GRA-72, 2 lbs. **$1.45**

GR-64 SPECIFICATIONS—Frequency range: 550 kc to 30 mc in four bands. **Controls:** General coverage tuning, Bandspread tuning, Bandswitch, Noise Limiter—ON/OFF, Phone-Standby-CW switch, BFO control, Audio Gain, AC-ON/OFF, Headphone jack, Q-multiplier input. **Power requirements:** 105-125 V 50/60 cycles AC, 30 watts. **Dimensions:** 13½" W x 6" H x 9" D.

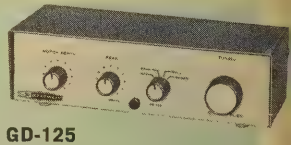
GR-64 **$37.95**



NEW Heathkit "Q" Multiplier!

New Compact "Low-Boy" Styling! Attractive charcoal cabinet with gray front panel . . . matches GR-64 SWL receiver (above). Ideal for use with GR-64 or similar receivers with IF circuits from 450 to 460 kc. Creates extra-sharp selectivity through an efficient "Q" of 4000, and provides a notch for adjacent signal attenuation. Includes built-in power supply.

Kit GD-125, 3 lbs. **$14.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.



GD-125 **$14.95**

Ideal Kit For Youngsters & "Beginners" . . . Our Lowest Cost Shortwave Radio!

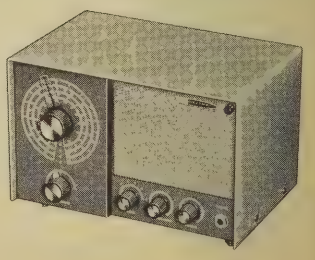
• Covers 140 kc to 18 mc in 4 bands • Transformer operated power supply • Built-in speaker & headphone jack, metal cabinet • Easy to build—from parts to listening in 6 hours

Brings You International Stations . . . amateur radio bands . . . marine & aircraft broadcasts . . . government stations . . . and entertaining AM listening. Simple 3-tube regenerative circuit assembles easily in 6 hours . . . an ideal project for the beginner in radio and electronics! Features provisions for long & short antennas, "shock-free" transformer-operated power supply, headphone jack for private listening, built-in speaker, front-panel controls and green & beige metal cabinet.

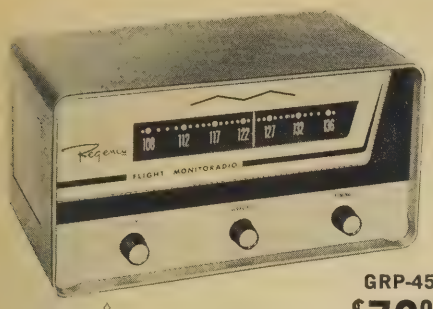
Kit GR-81, 12 lbs. **$23.50**

GR-81 SPECIFICATIONS—Frequency coverage: 140 kc to 18 mc on four bands. **Tube complement:** 12AT7 Detector/1st Audio, 50C5 Audio Output, 35W4 Rectifier. **Power requirements:** 105-125 V 50/60 cycle AC only, 30 watts. Fused. **Controls:** Main tuning (calibrated), Bandspread, Bandswitch, Regeneration, on/off volume, phone jack. **Dimensions:** 10" W x 7" H x 7" D.

GR-81 **$23.50**



For An Exciting New Listening Experience, Choose A Regency VHF FM Monitoradio!



GRP-45

$79.95

Regency Aircraft Monitoradio

• Covers 108 to 136 mc • 3-gang condenser with nuvistor RF amplifier for 1 uv sensitivity • Adjustable squelch for full quieting • Built-in 5" speaker • Fully tuned RF stage for better image rejection • Illuminated slide-rule dial • External speaker provision • Power transformer • Vinyl laminated leather-grained scratch & marproof metal cabinet • Not a kit

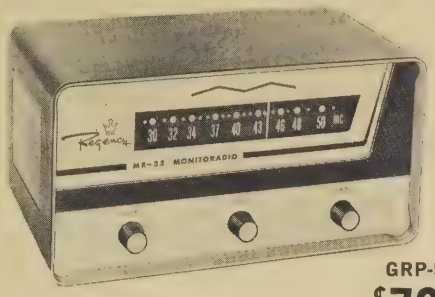
FOR THE SERIOUS AVIATION ENTHUSIAST! Hear aircraft, control towers, approach control, radar approach, ILS, Unicom, Omni-range . . . the whole exciting panorama of America in flight. Outperforms "commercial grade" aircraft receivers. Provides increased sensitivity . . . a stronger, clearer signal . . . improved signal-to-noise ratio . . . reduced oscillator radiation. Measures 12" W x 6¼" H x 6⅜" D.

Model GRP-45, 14 lbs., No money down, $8 mo. **$79.95**

GRP-45 SPECIFICATIONS: Frequency: 108-136 mc. **Sensitivity:** 1 uv for 10 db S + N/N at 30% modulation. **Squelch range:** Adjustable from .5 uv to 100 uv. **Power output:** 1 watt.



GDP-205 GDP-215



GRP-55

$79.95

Regency Model MR-33B

• Covers 30 to 50 mc • Full tuned RF stage insures better image rejection • Built-in 5" speaker • 3-gang condenser • 7 tube circuit with rectifier • Built-in adjustable squelch for complete quieting • Provision for external speaker or headphones • Illuminated slide-rule dial for quick, easy station tuning • Power transformer • UL approved • Not a kit

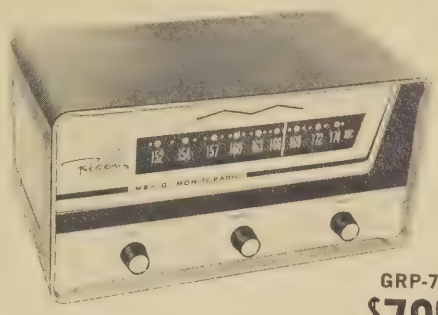
WIDEN YOUR LISTENING HORIZONS! With this quality engineered special-purpose radio, you keep posted on the latest happenings on power utility, industrial, highway maintenance, forestry, private mobile telephone and radio paging frequencies as well as fire and police calls. Completely assembled. Measures 7⅞" x 11¼" x 6½".

Model GRP-55, 13 lbs., No money down, $8 mo. **$79.95**

GRP-55 SPECIFICATIONS: Frequency: 30-50 mc. **Sensitivity:** 4.0 uv or better for 20 db quieting. **Squelch:** 2.0 uv (adjustable). **Power output:** 0.8 watt @ 10% distortion.

HY-GAIN ¼ Wavelength Unity Gain Ground Plane Antenna. Ideal for GRP-45 & GRP-75 monitoradio

GDP-205, 3 lbs.
(express or motor freight only)..... **$5.40**



GRP-75

$79.95

Regency Model MR-10B

• Covers 152-174 mc • 7 tube circuit with rectifier • Fully tuned RF stage for better image rejection • 3-gang condenser • Built-in 5" speaker • Reliable built-in, all-electronic squelch • Provision for external speaker or headphones • Illuminated slide-rule dial for nighttime operation • Power transformer • Listed by Underwriters' Laboratories • Not a kit

A NEW WORLD OF INTRIGUING LISTENING! Just look at the exciting array of broadcasts you can hear with this superb receiver . . . civil defense, police and fire department calls, U.S. Weather Bureau broadcasts, railroads, taxis, private mobile telephone, power utilities, forestry and other emergency services! Comes completely assembled. Just plug into any AC receptacle to enjoy its informative and entertaining coverage. 7⅞" x 11¼" x 6½".

Model GRP-75, 14 lbs., No money down, $8 mo. **$79.95**

GRP-75 SPECIFICATIONS: Frequency: 152-174 mc. **Sensitivity:** 4.0 uv or better for 20 db quieting. **Squelch:** 2.2 uv (adjustable). **Power output:** 0.8 watt @ 10% distortion.

HY-GAIN ¼ Wavelength Unity Gain Ground Plane Antenna. Omni-directional. Ideal for GRP-55.

GDP-215, 6 lbs.
(express or motor freight only)..... **$12.95**

Ideal For Service Stations Or Car Enthusiasts . . . Low Cost Auto Ignition Analyzer

•Spots ignition troubles—shows results of corrective action • Just flip a switch to select any of 4 different patterns without switching leads • Expand any view horizontally or vertically for a "closer look" • Easy to use—detailed instruction manuals provided for assembly and operation • Use on any internal combustion engine with conventional non-transistor ignition system

Helps Keep Your Car Running Smoothly! Shows shorted plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, etc. Complete manuals show what to look for on 4½" screen, how to isolate trouble. May be used with external DC to AC inverter. Corrosion-resistant aluminum case. Compact . . . 8" H x 9½" W x 16" D.

Kit IO-20, 17 lbs. . . . no money dn., $9 mo. **$89.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

IO-20 SPECIFICATIONS—RPM Range: 400-5000 rpm. **Displays:** Secondary, Primary, Parade, Super-imposed. **Screen size:** 4½" diameter. **Dwell measurement:** 4, 6 & 8 cylinder calibration on face plate. **Pattern height:** Secondary circuit, approx. 1". Primary circuit, 6 volt system ¾", 12 volt system 1". **Vertical expand ratio:** 2 to 1. **Horizontal expand ratio:** 10 to 1. **Cable length:** 12' pick-up clamp, 2' ground, primary and secondary clips. **Power requirements:** 105-125 V, 50/60 cycles AC, 30 watts.

Timing Light Kit . . . Accessory To IO-20 Ignition Analyzer!

• Easy to use—just plug into IO-20 Analyzer • Produces intense white light • Hard rubber case—10' connecting cable • Speed range 0-1250 flashes per minute (0-2500 rpm for 4-cycle engines) • Measures 6"H x 7½" L x 2" W

Kit ID-11, 3 lbs. **$14.95**

Famous Gilbert-Davis Basic Tester Set For Car Engine Tune Up And Repair!

Ideal For Do-It-Yourselfers & Professionals! Includes a Model 34 Remote Starter Switch with push button and extra long, neoprene insulated lead wires . . . Model 35 Compression Tester that reads 0-300 lbs. on 2½" dial—features short stem with 15° offset to reach back cylinders . . . Model 36 Vacuum/Fuel Pump Tester with 2½" 3-color dial—calibrated 0-30" for vacuum and 0-7 lbs. pressure . . . Model 37 Engine Timing Light with molded plastic case, long leads, and rubber covered connectors. Not a kit.

Model GFP-83, 4 lbs. **$11.95**



IO-20 $89.95

ID-11 $14.95

GFP-83 $11.95

Order 2 Or More 5-Watt CB Transceivers & Save 5%

Deluxe 5-Channel "Fixed Or Mobile" CB Transceiver—MW-34

• Front panel crystal socket–allows quick, convenient changing of one transmit crystal without removing cabinet • Spotting switch–generates a signal to tune receiver to exact frequency of changeable transmit. channel • TVI filter–minimizes interference with TV sets • Calibrated "S" meter • 5 crystal-controlled transmit & receive channels • 3-way power supply–6 or 12 v. DC, 117 v. AC • Superhet receiver with RF stage for high performance • Styled in handsome Heathkit marine motif • Easy to build • Complements Heath marine radio-telephones as alternative means of communication in many boating areas



IDEAL FOR BOAT, CAR, & HOME! With its compact size, 3-way power supply (117 VAC, 6 or 12 VDC) and mounting bracket, the MW-34 installs virtually anywhere you wish to set up CB communications.

SIMPLE TO BUILD! New 2-color, step-by-step instructions speed assembly. Includes PTT mike, AC & DC power cords, crystals for 1 channel (specify), FCC license pack. Use must comply with Part 95 FCC regulations.

Kit MW-34, 18 lbs...no money dn., $9 mo.....**$84.95**

MW-34 GENERAL DESCRIPTION: RECEIVER: 5-tube superheterodyne circuit with RF stage, squelch & automatic noise limiter. **Variable receiver tuning:** Any one of 23 Citizen's Band channels selected by front panel variable tuning dial (frequencies 26.965 to 27.255 mc). **Crystal-controlled receiver tuning:** Any five of 23 Citizen's Band channels determined by particular crystals installed in unit. **Sensitivity:** ½ uv for 10 db signal-to-noise ratio. **Selectivity:** 5 kc @ 6 db down from peak response. **Input impedance:** 50 to 70 ohm. **TRANSMITTER SECTION: Nominal power input to final RF amplifier:** 5 watts. **Output impedance:** 50 to 70 ohm. **GENERAL SPECIFICATIONS—Meter:** For receiving, S9 scale indication corresponds to approximately 30 microvolts signal input. **Power requirements:** 105-125 volts, 50/60 cps, AC 72 watts. 12 volts DC, 4.5 amperes; 6 volts DC, amperes. **Dimensions: Overall;** 4⅝" H x 8⅜" W x 11" D.



GW-42
$99.95

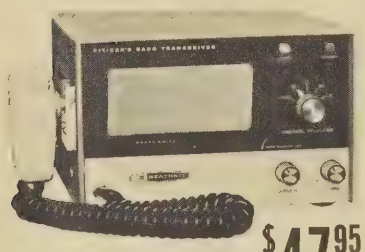
• 5 crystal-controlled transmit & receive channels • Built-in 4 tone selective call circuitry • All-channel receiver tuning • Tuning meter • Built-in 3-way power supply • Adjustable squelch • Switchable automatic noise limiter • Easy to build

Deluxe 5-Channel "Master Station" Fixed Or Mobile CB Transceiver

ATTRACTIVE STYLING, YET RUGGED & READY TO GO ANYWHERE! Car, truck, barn, office, or home . . . anywhere you need complete command of a 2-way CB radio setup. Shorten the time and distance required for efficient farm, business, or personal communications. Includes PTT microphone, AC & DC power cables, FCC license pack, and crystals for 1 channel (specify). Use must comply with Part 95 FCC regulations.

Kit GW-42, 23 lbs...no money dn., $10 mo.....**$99.95**

GW-42 GENERAL DESCRIPTION—RECEIVER SECTION: 6 tube superheterodyne circuit with RF amplifier, squelch, noise limiter. **Intermediate frequency:** 455 kilocycles. **Sensitivity:** ½ microvolt or less for a 10 db signal to noise ratio. **Selectivity:** 40 db attenuation of adjacent channel. **TRANSMITTER SECTION: Nominal power input to final RF amplifier:** 5 watts. **Frequency control:** 3rd overtone crystal as selected by 5-position switch. **Modulation:** AM plate modulation, automatically limited to less than 100%. **Output impedance:** 50-70 ohm. **TONE SQUELCH SECTION: Frequency control:** Resonant reed relay; with reeds used for generation of calling tone and frequency selection during monitoring. **Power requirements:** AC at 105-125 volts, 60 cycles, 70 watts; 6 VDC at 9 amps; 12 VDC at 5 amps. **Dimensions:** 5⅞" H x 17½" W 10½" D.



GW-22A
$47.95

Heathkit 5-Channel CB Transceiver

• 5-crystal-controlled transmit & receive channels • Superhet receiver with RF stage • Built-in squelch & automatic noise limiter • Push-to-talk microphone • Easy to build

FOR THE ULTIMATE IN VERSATILITY AT LOWEST COST . . . all models include full 5 channel capability, PTT mike, power cable, & crystals for 1 channel (specify). Use must comply with Part 95 FCC regulations.

Kit GW-22A (117 v. AC), 13 lbs...No money down, $5 mo.....**$47.95**
Kit GW-22D (6 or 12 v. DC), 13 lbs...No money down, $5 mo.....**$49.95**
Kit GW-32A with Selective Call (117 v. AC), 14 lbs., No money down, $7 mo.....**$69.95**
Kit GW-32D with Selective Call (6 or 12 v. DC), 14 lbs., No money down, $8 mo.....**$74.95**



GW-12A
$34.95

Low-Cost "One-Channel" CB Transceiver

• Crystal-controlled transmit & receive channel • Built-in squelch & automatic noise limiter • Superheterodyne receiver • Ideal for fixed or mobile use • Clean, open circuit layout for quick, easy assembly • Includes cabinet, PTT mike, & crystals (1 channel–specify) • Use must comply with Part 95 FCC regulations

Kit GW-12A (AC only), 10 lbs...No money down, $5 mo.....**$34.95**
Kit GW-12D (AC & DC), 13 lbs...No money down, $5 mo.....**$39.95**

Dollar-Saving CB Accessories!

Ⓐ **Hy-Gain Roof Top Mobile CB Antenna.** The famous Shorty "Roof-Topper". Overall height 22". **GDP-245,** 2 lbs.....**$15.50**

Ⓑ **Hy-Gain AM/CB Mobile CB Antenna.** Telescoping "Duo-Topper". 28" min.–50" extended. Includes coax, coax connector, rf coupler, & AM radio plug . . . all preassembled. **GDP-255,** 2 lbs.....**$14.95**

Ⓒ **Hy-Gain Trunk Mount Mobile CB Antenna.** "Jiffy-Topper". Overall height 50". Includes 16' of coax cable plus connector. **GDP-265,** 2 lbs.....**$13.95**

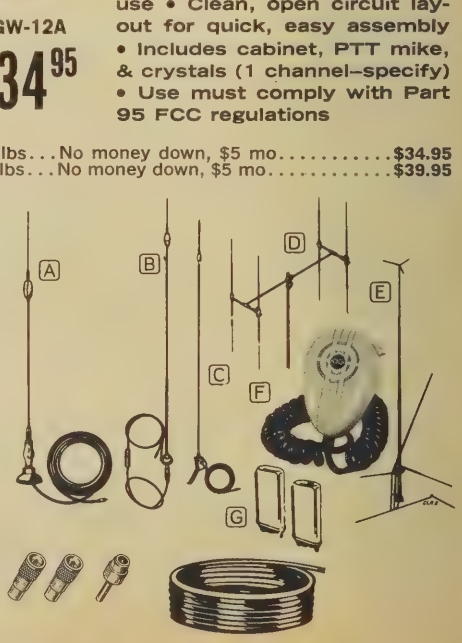
Ⓓ **Hy-Gain Dual Beam CB Base Antenna.** Duo-Beam 4 model 114DB. 42 watts effective radiated power from a 5-watt rig with this roof-top vertical-element antenna! **GDP-275,** 16 lbs...no money dn., $5 mo...**$39.95**

Ⓔ **Colinear CB Base Antenna.** Ground plane type antenna. Overall height of radiator . . . 19'10"—length of radials . . . 9'. Provides the most efficient omni-directional base station antenna. **GDP-285,** 8 lbs...no money dn., $5 mo...**$29.95**

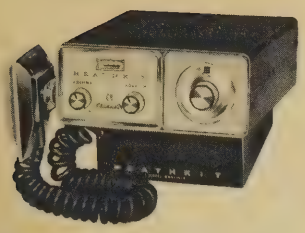
Ⓕ **PTT Microphone.** Push-to-talk mike with tailored audio response. Complete with cable. Less plug. **GH-12,** 2 lbs.....**$6.95**

Ⓖ **Extra CB Transmit & Receive Crystals,** 1 lb., only **$1.99** each with order of any Heathkit CB transceivers . . . reg. $2.95 each. (Specify base/mobile or hand held transceiver.)

Coax Cables. Ideal for use with any Citizen's Band or Amateur radio communications system. Also ideal for GDP-285 and GDP-275 CB Base Station Antennas
Each kit contains 2 coax plugs & 1 phono plus instructions.
Kit GD-295, 50 ft., 2 lbs.....**$3.75**
Kit GD-305, 100 ft., 4 lbs.....**$5.50**



All-Transistor 23-Channel 5-Watt CB



OPERATES "FIXED" . . . with accessory AC power supply . . . GWA-14-1. AC power switching is accomplished through the ON-OFF-VOLUME control on the "Transceiver" front panel. The GWA-14-1 is a desk-top base for the "Transceiver" and provides all necessary power . . . requires only one plug-in connection.

Kit GWA-14-1, AC Power Supply, 5 lbs. **$14.95**

CRYSTALS ONLY $1.99 EACH WITH TRANSCEIVER ORDER! If you need more than 1 channel, order the extra crystals along with your transceiver for only $1.99 each . . . a 96c savings. Regularly $2.95 each when ordered separately.



Kit GW-14
$89.95
Assembled GWW-14
$124.95

COMPLETE 23-CHANNEL CB CRYSTAL PACKAGE . . . . . $79.95!
A regular $135.70 value! Includes transmit & receive crystals for all CB channels for complete GW-14 operating capability . . . a total of 46 crystals. For maximum versatility, this package is your best dollar buy! **GWA-14-2,** 1 lb. no money dn., $8 mo. **$79.95**

Even Factory Assembled With All Crystals Installed, This New Heathkit GW-14 Makes All Other Transistor Rigs Overpriced!

• 14 transistor, 6 diode circuitry • Provision for 23 crystal-controlled transmit & receive channels • Full 5 watt performance • Only 2⅞" H x 7" W x 10½" D . . . ideal for car, boat, any mobile installation • Front panel "S" meter • Adjustable squelch control • Automatic noise limiter • Built-in PM speaker • ½ uv sensitivity for 10 db signal plus noise to noise ratio • Circuit board construction • Gimbal mounting bracket • Attractive Turner Ceramic PTT Mike • Die-cast, chrome-plated front panel with rust-resistant aluminum charcoal gray cabinet.

ALL-CHANNEL, ALL-TRANSISTOR! Just flip the channel selector to any desired channel and you're ready for instant 2-way communications. The efficient twin "pi" network output assures a *minimum* of 3 watts RF output from the 5-watt circuit . . . assures you of dependable all-channel communications over maximum distance. The GW-14 is all transistorized . . . no component deterioration to let you down, as with tube types. It runs cool, and collected . . . draws only 0.75 amps during "transmit", only 0.12 amps on "receive". Your GW-14 will give you new standards in CB performance.

EASY TO BUILD . . . EASY TO OPERATE. All parts mount on a single circuit board, and assembly is completed in a few evenings. Tune-up is easy, requiring only another CB unit. Operation is push-to-talk. The improved adjustable squelch control eliminates all speaker hiss during standby. Illuminated channel selector and "S" meter enable convenient nighttime operation.

INCLUDES MICROPHONE & POWER CABLES . . . and crystals for one channel (specify channel no.). For 12 v., negative ground only, (for 117 VAC operation order GWA-14-1 power supply below); FCC license required. Use must comply with Part 95 of FCC Regulations.

Kit GW-14, 8 lbs., no money dn., $9 mo. **$89.95**
Assembled GWW-14, 8 lbs., no money dn., $12 mo. **$124.95**
Kit GWA-14-1, AC Power Supply, 5 lbs. **$14.95**

GW-14 SPECIFICATIONS—RECEIVER SECTION: General description: 6-transistor superheterodyne circuit with RF amplifier, squelch, noise limiter, 23-channel crystal controlled tuning with tuning and relative signal strength indicator. **Intermediate frequency:** 455 kc. **Sensitivity:** ½ uv or less for a 10 db signal plus noise to noise ratio. **Selectivity:** Adjacent channel attenuation is down 30 db. **Audio power output:** 3 watts minimum. **TRANSMITTER SECTION: Nominal power input to final RF amplifier:** 5 watts. **Frequency control:** 3rd overtone quartz crystal as selected by the 23-position channel selector switch. **Frequency control effectiveness:** Operating frequency will be within .005% of nominal crystal frequency over an ambient temperature range of —20 to +130 degrees F. **Modulation:** High level AM limited to less than 100%. **Output impedance:** 50 ohms nominal. **Output circuit:** Twin "PI" matching network. **Power output:** 3 watts minimum into 50 ohms load. **GENERAL—Controls:** Squelch; off/on volume; channel selector. **Tuning meter:** For receiving, S-9 corresponds to approximately 100 uv signal input. For transmitting, the meter indicates the presence of power output and modulation peak. **Power requirements:** Positive 12 volt system (13.4 volts); receiver current drain, standby—120 ma.; transmitter current drain—750 ma. **Dimensions:** 2-13/16" H x 7" W x 10-7/16" D.

Ⓐ Best Buy Long Range 1 Watt Walkie-Talkie

• Efficient 10-transistor, 2-diode circuit for dependable, trouble-free performance • Up to 3-mile inter-unit communications • Crystal-controlled transmit & receive • Adjustable squelch control & automatic noise limiter • $20 rechargable battery included • Built-in 117 v. AC battery charger • Sturdy, rustproof all-metal case • Simple to build & operate • Complete with power cords, strap, crystals (specify channel) • FCC license required

Kit GW-52A, 4 lbs. . . . no money dn., $7 mo. **$69.95**
Kit GW-52-2, (pair), 8 lbs. . . . no money dn., $12 mo. **$129.95**

Ⓑ Deluxe 9-Transistor Walkie-Talkie

• Range up to one mile between units • Crystal-controlled transmitter & superheterodyne receiver • Built-in squelch & automatic noise limiter • No license required when operated according to FCC Reg. Part 15 • Includes earphone, strap, crystals (specify channel) • Less battery

Kit GW-21A, 3 lbs. . . . no money down, $5 mo. **$39.95**
Kit GW-21-2 (pair) 6 lbs. . . . no money down, $8 mo. **$74.95**
GWA-30, Battery Set (2), 1 lb. **$2.95**

Ⓒ Compact 4-Transistor Walkie-Talkie . . . Ideal for Sports Use

• Range ¼ mile or more between units • Crystal-controlled transmitter–superregen. receiver • Fits in pocket or purse • No license required when operated according to FCC Reg. Part 15 • Includes crystal (specify channel) • Less battery

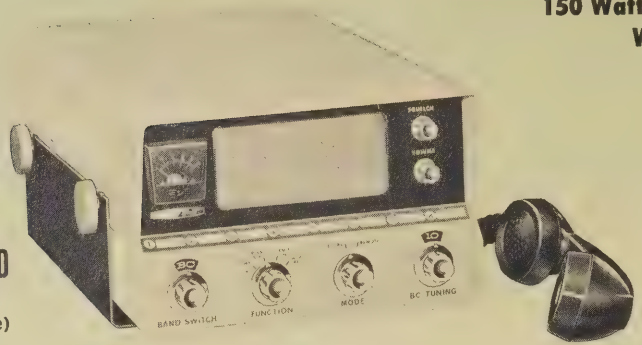
Kit GW-31A, 2 lbs. **$19.95**
Kit GW-31-2 (pair), 4 lbs. . . . no money dn., $5 mo. **$35.00**
GWA-30, Battery Set (2), 1 lb. **$2.95**



CB CRYSTALS $1.99 EACH WITH ANY TRANSCEIVER ORDER

Heath Marine Electronics . . . Safety

Heath-Built High-Efficiency 150 Watt Marine Radiotelephone With Optional Remote Control Facilities



MWW-15
$425.00
(less remote)



MWA-15-1
$99.00

• 150-watt power input • 8 crystal-controlled transmit and receive channels (2-5 mc) • AM broadcast band reception • 15-watt deck hailing capability • All solid-state receiver circuitry • Operates remotely with MWA-15-1 • Includes new "Local-Distance" switch • Completely assembled & tested • FCC type accepted for party boat use & D.O.T. approved

Here's Safety & Dependability Afloat . . . power to reach out to other ships, the Coast Guard, or telephone company . . . up to 150 miles away! The selection of 8 channels assures communications even under crowded band conditions, and the new "Local-Distance" switch prevents overloading by strong signals. The relative power meter lets you know you are using full power. Cruise with safety . . . choose the MWW-15.

Includes Detailed Installation Manual . . . plus all necessary FCC application forms. Easy to install! Includes crystals for 2182 & 2683 kc. Must be tuned by licensed technician.

Assembled MWW-15, 31 lbs. . . $43 dn., as low as $25 mo. **$425.00**
Assembled MWW-15R, 41 lbs. . . 150 watt 'phone plus remote control. . . write for credit details. **$524.00**
Assembled MWA-15-1 Radiophone remote control unit, 10 lbs. . . no money dn., $10 mo. **$99.00**
Assembled MWA-15-2 Optional Push-to-talk microphone, 2 lbs. . . . **$9.95**
Extra transmit & receive crystals (specify), 1 lb. . . . . ea. **$2.95**
24′ Radiotelephone Antenna . . . with laydown swivel base & high impact side mount. Ready to install.
MDP-74, 14 lbs., (Motor Freight or Express Only) . . . no money dn., $7 mo. **$69.95**

MWW-15 SPECIFICATIONS—RECEIVER: Frequency range: Marine, 2-5 mc. Broadcast 540-1620 kc. **Sensitivity:** (providing 10 db S/N ratio or better) Marine channels, 2 microvolts; Broadcast, 10 microvolts. **TRANSMITTER: Frequency range:** 2-5 mc marine bands. **Final power input:** 150 watts. **RF output:** 80 watts. **Power requirements:** 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 20 amps. **Dimensions:** 6½″ H x 11¼″ W x 17″ D.

SPECIAL COMBINATION OFFER . . . SAVE $89.24
Offer Good Until May 31, 1966
Includes MWW-15 Radiophone, MWA-15-1 Remote Unit, MDP-74 24′ Antenna, Plus MDP-104 Deck Speaker. Order MWS-2.
$525.00

Remote Control For Heath 150 and 75-watt Radiophones

• The smartest remote control to complement the bridge of any boat • Full remote control for MWW-14A or MWW-15 radiophones • Includes on/off, volume, squelch, mode switch, and channel selector • Telephone handset • Universal gimbal mounting bracket • Completely factory assembled with detailed installation/operating manual included • Styled to match MWW-14A & MWW-15 • Includes 25′ of interconnecting cable with all connections preassembled

Provides Complete Remote Control Of Your MWW-14A Or MWW-15 Radiotelephone . . . perfect for flying bridge installations! Order model MWW-15R or MWW-14AR for radiophone and remote control combination completely factory assembled and ready to install. Order for Remote Control alone (MWA-15-1) includes "Remote," all necessary hardware, plus drive motor & instructions for installation in radiophone.

Assembled MWA-15-1, 10 lbs. . . no money dn., $10 mo. **$99.00**

MWA-15-1 SPECIFICATIONS—Front panel controls include: Squelch, On/Off and Volume, Mode—internal speaker—external speaker-handset, Channel selector. **Dimensions:** 5″ H x 9″ W x 4¾″ D.

Notice To Radiophone Buyers! Contact your local Heathkit Electronic Center or Heathkit Service Center (Addresses pg. 2) for tune-up or installation of your Heathkit Radiophone by FCC licensed technician.

Heath-Built 75-Watt Radiotelephone With Optional Remote Control



MWW-14A
$279.95



• 75-watt power input • 6 crystal-controlled transmit and receive channels (2-5 mc) • AM broadcast band tuning • 15-watt deck hailing capability • Transistorized receiver • Operates remotely with MWA-15-1 • Includes new "Local-Distance" switch • Assembled & tested • FCC type accepted for "party-boat" use and D.O.T. Approved

SPECIAL COMBINATION OFFER . . . SAVE $20.19
Offer Good Until May 31, 1966
Includes MWW-14A Radiophone, MDP-13 18′ Antenna and MDP-104 Deck Speaker. Order MWS-1.
$340.00

Here's A 75-Watt Marine Radiotelephone That Brings Marine Electronics Up To Date. Includes many of the features of the MWW-15, 150-watt radiophone! Plus, the new "Local-Distance" switch to prevent overloading by strong signals. Compact size, dependable solid-state circuitry, high efficiency with low current demands, and layout of controls "human engineered" to be easy to operate make the MWW-14A one of the most modern marine radiophones of its power class.

Owner's Manual Is Complete . . . gives all the information you need, plus hints on good operation. Includes instructions for installation & FCC application forms. Must be tuned by a licensed technician.

Assembled MWW-14A, 31 lbs. . . No money down, $26 mo. **$279.95**
MWA-14-1 Telephone-type hand set . . . 2 lbs. . . No money down, $5 mo. **$24.95**
Extra transmit & receive crystals (specify), 1 lb. . . . each **$2.95**
Assembled MWW-14AR, 41 lbs. . . 75-watt Radiophone plus remote control. . . $38 dn., as low as $23 mo. **$378.95**
Assembled MWA-15-1 Radiophone remote control unit, 10 lbs. . . no money dn., $10 mo. **$99.00**
18′ Radiotelephone Antenna . . . with laydown swivel base & high impact side mount. 2-3 mc band.
MDP-13, 12 lbs., (Motor Freight or Express Only) No money down. $6 mo. **$59.95**

MWW-14A SPECIFICATIONS—RECEIVER: Frequency range: Marine, 2-5 mc. Broadcast, 540-1620 kc. **Sensitivity:** (providing 10 db S/N ratio or better) Marine channels, 2 microvolts; Broadcast, 10 microvolts. **TRANSMITTER: Frequency range:** 2-5 mc marine bands. **Final power input:** 75 watts. **RF output:** 40 watts. **Power requirements:** 12 volts DC. Receiver only, 0.6 amp. Standby, 2.9 amp. Transmit, 16 amps. **Dimensions:** 6½″ H x 11¼″ W x 17″ D.

& Dependability Through Modern Design

Heath-Built 25-Watt Radiotelephone . . . Perfect For The Small Sailing Auxiliary Or Power Craft With Medium Cruising Range



MWW-13AS
$189.95

• Choose the complete MWW-13AS system for owner installation • Choose separate components for installation with technician checkout • 4 crystal-controlled transmit & receive channels • Covers 2-3 mc marine—receives AM broadcast band • 10-transistor, 5-diode, 3-tube circuit • Built-in heavy-duty transistor power supply • FCC type accepted • Factory assembled & tested, ready to install

Dependable Communications For Mariners On The Go . . . Install the pre-tuned MWW-13AS system yourself . . . all accessories are included. Use the outboard motor for a ground. Or you can purchase the MWW-13A radiotelephone separately. It's easy to install . . . instructions are complete. Just have an FCC licensed technician perform final tune-up. Crystals for 2182 & 2638 kc are included. (Ship-to-shore & distress channels). Enjoy safe cruising next season with the Heath-Built 25-watt radiophone.

MWW-13A SPECIFICATIONS—Frequency range: 2-3 mc. Broadcast: 550-1600 kc. **Receiver sensitivity for 10 DB S/N ratio:** Marine—3 microvolts—Broadcast—10 microvolts. **Audio output:** 3 watts to internal speaker. **Transistor complement:** (1) 2N1525 Mixer; (1) 2N1525 Oscillator; (1) T1364 1st I.F.; (1) 2N1274 1st Audio; (3) 2N1039 Audio Driver & Power Converters; (2) 2N1525 2nd & 3rd I.F.'s; (2) 2N301 Audio Output & Modulator; (6) diodes, AVC, overload, Squelch, Noise Limiter & Detector. **Transmitter RF input:** 25 watts. **RF Output:** 13 RF watts. **Transmitter tube complement:** (1) 6AK6 Oscillator; (2) 6AQ5 amp. **Power requirements:** 12 V DC, receiver only, .350 amps.; standby, 1.2 amps.; transmit, 5 amps. **Dimensions:** 4½" H x 8¼" W x 10½" D.

Assembled MWW-13AS, Complete system for do-it-yourself installation on outboard powered boats only, includes radiophone, antenna & instructions, 22 lbs. . . No money dn., $18 mo. **$189.95**
Assembled MWW-13A, Radiophone for technician installation on any boat, 17 lbs. . . No money down, $16 mo. **$164.95**
MDP-93, 13' Fiberglass Antenna, 5 lbs. . . (Motor Freight or Express only), no money dn., $5 mo. **$34.95**
MDP-103, Swivel lay-down base mount, 2 lbs. **$9.95**
Extra transmit & receive crystals (specify) 1 lb. . . . . each **$2.95**

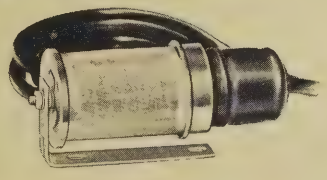
Complete Package MWW-13AS For Do-It-Yourself Outboard Installation! Includes: 25-watt Radiotelephone, "gimbal" mounting bracket, 13' antenna (MDP-93), antenna cable, ground cable, power cable, crystals, push-to-talk microphone, FCC License pack and complete instructions!



New! Fuel Vapor Detector With Visual And Audible Warning



MI-25
$39.95

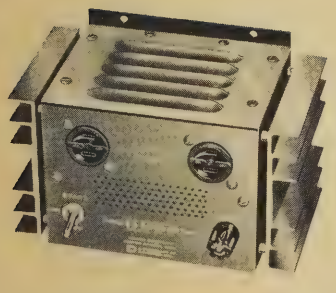


• New more dependable circuitry • Fully transistorized • Gives both visual and audible warning of combustible gas fumes • Self-testing "Fail-Safe" provision—sounds alarm in the event of component failure • Built-in relay for control of bilge blowers, ignition "disable", or warning lights • Simple to build & install—from package to protection in 3 hours

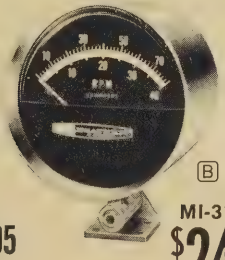
Fire At Sea! . . . Your Most Fearsome Peril! You can't afford to overlook any precaution or safety feature. A sensitive Fuel Vapor Detector is your best assurance against explosion due to accumulated fumes. The new MI-25 Fuel Vapor Detector features a performance proven detector "head", plus new advanced circuitry to provide even greater security. In addition to the "SAFE–DANGEROUS–EXPLOSIVE" meter reading, a built-in 2500 cps audible alarm sounds whenever fumes are present. Power & detector cables unplug from unit for fast, easy removal from your boat. The Heathkit MI-25 is your best assurance to a safe voyage.

Kit MI-25, 4 lbs. . . no money dn., $5 mo. **$39.95**

MI-25 SPECIFICATIONS—Voltage: 12 VDC, ±10%. **Current:** 1.0 amp nominal. **Panel size:** 2-1/16" H x 5-11/16" W. **Depth:** 5". **Detector head size:** 1½" round x 2½" long. **Length of interconnecting cable supplied:** 15'. **Color:** Marine white & black. **Material:** Aluminum. **Temp. range:** —-20° C. to +80° C. **Audio alarm:** 2500 cps.



Ⓐ
MP-10
$29.95

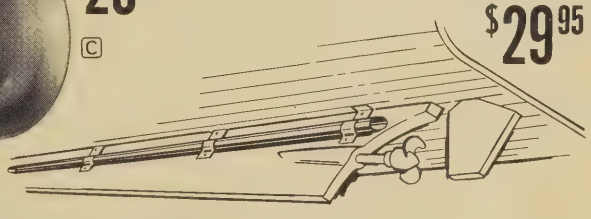


Ⓑ
MI-31A
$24.95



MDP-104
$20.29
Ⓒ

Ⓓ
MD-14
$29.95



Ⓐ Heathkit Power Converter . . . For AC Power Afloat

For Boat, Trailer, or Car. Changes 6 or 12 VDC to 110 volt square-wave AC power for small appliances. Not recommended for TV, tape recorders, record players, compressor-type refrigerators which require high starting current and/or standard sine wave current. Write for MP-10 Applications Bulletin.

Kit MP-10, 8 lbs. . . no money dn., $5 mo. **$29.95**
Assembled MPW-10, 8 lbs. . . no money dn., $5 mo. **$39.95**

Ⓑ Heathkit All-Transistor Tachometer

Operates On 6, 12, 24 Or 32 V. DC Systems! Works on all inboard or outboard marine & auto engines (1-6 cylinder, 2 cycle or 1-16 cylinder, 4 cycle) that use standard coil & distributor ignition systems. Switch selection of 0-4000 & 0-8000 rpm ranges, plus wiring option for 0-2000 & 0-4000 rpm. Lighted dial. Ball & socket mount. Positive or negative ground.

Kit MI-31A, 3 lbs. . . no money dn., $5 mo. **$24.95**

Ⓒ University Deck Speaker

Heath Recommended Horn Projector . . . Excellent for use as a deck hailer speaker with the MWW-14A & MWW-15 Radiotelephones. Driver unit and horn are weatherproof with marine gray finish and feature "any angle" swivel mounting. May be repainted to color of your choice. Specs.: 25 watts, 8 ohms, 200-13,000 cps.

Model MDP-104, 7 lbs. . . mfrs. list $34.50. . . . . Net **$20.29**

Ⓓ Heathkit Marine Electrical Ground System

Extends Radio Range . . . the MD-14 provides adequate grounding for your radiotelephone. Consists of two 8' heavy-gauge copper tubes, tapered at the ends, requires only bolting through keel (min. length 9', max. thick. 5") & one thru-hull fitting. Does not affect balance, steering, or maneuverability.

Kit MD-14, 20 lbs. . . (Motor freight or Express only), no money dn., $5 mo. **$29.95**

Heath Marine Navigational Aids



Heathkit "Mariner" 3-Band Radio Direction Finder For Safe, Sure, All Weather Navigation

• Use your "Mariner" for easy, precise offshore navigating • Use it for entertainment listening on AM radio, or for monitoring the marine channels • Covers Beacon/Consolan, AM & Marine telephone bands • All-transistor circuitry for dependability, long life & low battery drain • Independent built-in battery power supply • Simple to build—complete with factory built & aligned "front-end" tuner and prewired component package

Cruise With Safety . . . Your "Mariner" is always ready to show you exactly where you are through accurate triangulation—as easy as reading a map.

"Mariner" Resolves The Problem Of The Double Null. Strong or weak signals, the front panel "Sensitivity" control sharpens the accuracy of the tuning null. Automatic gain control circuitry makes it a deeper, more distinct null. And a signal phasing sense circuit assures that it is the correct null . . . the true bearing.

True Nautical Styling And Engineering. The spring-return switch provides dial and meter lighting without putting a continuous load on the batteries. "Mariner" is completely portable and independent from "ship" power, since battery power is internal . . . with life up to 1000 hours! The cabinet styling is handsome, practical, and makes a worthy addition to any boat. Easy-to-read step-by-step assembly manual includes installation and operating instructions, plus a section on direction finding theory. Cruise with greater safety . . . take along a "Mariner."

Kit MR-21A, 13 lbs. . . no money dn., $11 mo. **$109.95**

MR-21A SPECIFICATIONS—Beacon band: 188 to 410 kc. **Broadcast band:** 535 to 1620 kc. **Marine band:** 1650 to 3450 kc. **Sensitivity for 6 DB signal-to-noise ratio:** BC band, 40 uv/ meter; Beacon band, 120 uv/meter; Marine band, 25 uv/meter. **Normal bearing accuracy:** ±3°. **BFO:** 455 kc, switch-selected. **Speaker:** 4" x 6" weatherproofed. **Power requirements:** 9 volts from 6 standard size "D" flashlight batteries. **Battery drain:** 90 ma @ 350 mw max. output level. **Battery life:** 500-1000 hours. **Dial light:** Spring-return switch operated. **Null & Tuning indicator:** 0-1 ma meter. **Transistors:** (1) 2N409 Sense amplifier; (1) T1363 RF amp.; (1) 4JX-1D925 Oscillator; (1) 2N1526 mixer; (5) 2N1274 AGC amp., audio amp., audio output & BFO oscillator; (2) T1364 1st & 2nd I.F.; (1) crystal diode detector. **Dimensions:** 10" H x 10" W x 8½" D including base and loop.

Heathkit MI-11A Depth Sounder . . . Best Value Anywhere

• Accurately readable—to 1 foot divisions with 5% accuracy • Reaches down to 200 feet on hard bottoms • Sensitive all-transistor circuit—instant operation, reliable performance • Self-contained or boat battery powered for added convenience • Simple, stable circuit board construction • External power connection & switch on rear panel for easy access

Safety For The Yachtsman . . . A Favorite Aid For The Weekend Fisherman . . . Avoid the embarrassment of running aground . . . or worse yet, the cost of repairs. Spot your favorite fishing ground, or actually "see" schools of fish. Invaluable in a fog. For fun or serious boating, the Heathkit Depth Sounder can be your favorite shipmate.

Compare With More Costly Units! An all-transistor circuit puts your MI-11A in operation instantly . . . keeps it operating faithfully, accurately —within 5% of all readings! And then there's the attractive rustproof metal cabinet with gray, white, black & blue color styling, and gimbal mounting bracket for installation virtually anywhere.

2-Way Power Supply Offers Versatility, Portability! An internal-external battery switch permits convenient selection of self-contained or boat battery operation (uses 9 standard "C" flashlight batteries—not included). Also includes a waterproof transducer.

Assembles In Just 4 To 6 Hours! Fast, stable fiberglass circuit board construction . . . requires no special skills or knowledge.

Kit MI-11A, 8 lbs. . . no money dn., $7 mo. **$69.95**
Model MIA-11, Accessory transducer mount, 2 lbs. **$8.95**

MI-11A SPECIFICATIONS—Dial: 0-200 feet in one foot divisions. **Range:** 0-200 feet on hard bottoms, 0-100 feet on soft bottoms. **Frequency:** 200 kc. **Sounding rate:** 1440 soundings per minute, or 24 per second. **Accuracy:** Within 5% of actual depth. **Depth indication:** Neon lamp flashing at 0 feet and again at indicated depth. **Transducer:** Barium titanate ceramic element encased in a waterproof housing with solid brass fittings; attached 15 foot length of 2 conductor shielded cable. May be mounted permanently to the hull or temporarily with a transom mount. **Controls:** Combined ON/OFF-Sensitivity. **Power supply:** 13.5 volts from nine self-contained size C flashlight cells, or external 12 volt battery. Flashlight cells are contained in three leakproof plastic housings. **Battery drain:** 100 milliamperes. **Average battery life:** Up to 25 hours intermittent operation. **Dimensions:** 7¼" W x 5¼" H x 7½" D.

Heathkit MD-24 . . . Foghorn/Hailer/Boat Horn With A Flip Of A Switch



• All-transistor, 30-watts peak power • 10" weatherproof horn speaker for deck mounting • Fused electronics for protection • Gimbal mounting bracket for versatile installation • Fast, stable circuit board construction

Use It As A Foghorn . . . Just set the function switch to "foghorn" . . . the powerful warning tone sounds for six seconds, rests for twenty seconds, then recycles . . . penetrates the foggy atmosphere for more than one mile.

Use It As A Deck Hailer . . . Sound Off! Excellent for docking & hailing other boats.

Use It As A Boat Horn . . . 30-watts peak power at a touch of the button.

Kit MD-24, Includes basic unit, plus PTT mike & 10" deck speaker, 12 lbs. . . no money dn., $8 mo. **$79.95**

MD-24 SPECIFICATIONS—Output power: 30 watts peak. 20 watts continuous. **Fog horn sequence:** 6 second on, 20 seconds off. **Cable furnished:** 20' speaker cable. **Power requirements:** 12 v. DC, 4.0 amps. Max. (horn sounding), less than 0.1 amp, no signal. **Overall size:** 4⅞" H x 6½" W x 6" D. **Color styling:** White, gray & black. **Cabinet:** Aluminum.

Heathkit® Portables With "Big-Set" Sound!

Deluxe Solid-State AM Portable . . . Makes Distant Stations Sound Local . . . Makes Everything Sound Better!



GR-24
$28.25

• 6 silicon transistor, 2 diode circuit gives 8 transistor performance • Uses standard "D" size flashlight batteries . . . only 1/10 the operating cost of typical pocket-size portables • Large 4" x 6" permanent magnet oval speaker for "big-set" sound • Easy-to-read slide-rule dial • "Thumb-touch" controls • Vernier tuning • Tuned RF stage & double-tuned I.F. stage for greater sensitivity & selectivity • Big ½" diameter built-in rod antenna for distant station reception • Handsome black simulated leather case • Fast, simple circuit board construction

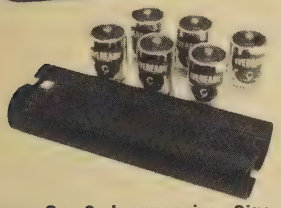
TIRED OF SQUEAKY-VOICED PORTABLES? The kind with the "tinny" sound? The kind that devours batteries? Then it's time you built a Heathkit GR-24. The listening's easy . . . through its large 4" x 6" speaker. No need to turn the volume up full just to hear it. Puts out a full 250 milliwatts from a husky audio output stage that's diode biased for a crisp, bold sound even when battery voltage finally runs low. Its big ½" diameter ferrite rod antenna provides pulling power that rivals hi-fi receivers . . . picks up stations miniatures can't get. For extra sensitivity and selectivity, there's a tuned RF stage and a double-tuned IF stage. Carries easily, too . . . with its compact shape, light weight, and easy-grip handle.

MORE ECONOMICAL THAN MINIATURES, TOO! Costs only 1/10th as much as pocket-size models to operate. Uses 6 size "D" batteries (not included) . . . protected against corrosion by a plastic battery holder.

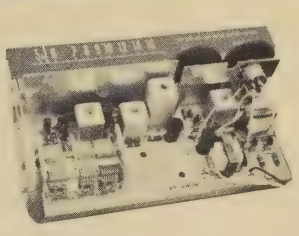
SMART DESIGNER STYLING . . . ASSEMBLES IN 4 HOURS! Handsomely fashioned black simulated leather case with a chrome-finish plastic frame and anodized aluminum grille make the GR-24 an attractive companion. And for quick simple station selection, there are two "thumb-touch" controls and a slide-rule dial. Assembly takes only about 4 to 6 hours with fast circuit board construction.

Kit GR-24, 5 lbs. . . no money dn., $5 mo. **$28.25**

GR-24 SPECIFICATIONS—Tuning range: 535-1620 kc. **IF frequency:** 455 kc. **Sensitivity:** 50 uv/m for 10 db signal-to-noise ratio at 50 mw output. **Audio output:** 250 mw @ 10% distortion. **Speaker:** 4" x 6" oval permanent magnet type. **Battery:** 9 v; 6 "D" flashlight cells. **Current drain:** No signal: 11 ma; 50 mw audio output: 41 ma. **Dimensions:** 3¾" D x 8¾" W x 7" H (overall).



Runs On 6 Inexpensive Size "D" Flashlight Batteries . . . only 1/10 the operating cost of pocket-size portables. Plastic battery holder protects against corrosion.



Wide, Open Chassis Layout . . . and simple circuit board construction assure fast, easy assembly. Takes around 4 to 6 hours.

GR-151A
$20.65



Explore The Fun Of Kit-Building With This "Beginner's" Solid-State AM Portable . . . Includes FREE Battery & Tool Kit!

• 6-transistor, 3-diode circuit • 4" x 6" speaker for "big-set" sound • Built-in ferrite rod antenna for distant station pickup • Pre-aligned coil and IF transformers assure peak performance • Rugged simulated tan leather case • Fast, simple circuit board construction

GOES FROM PARTS TO PROGRAMS IN JUST 4 TO 6 HOURS! And everything you need to build it is included . . . solder, soldering iron, wire stripper & cutter, screwdriver, nut starter, alignment tool . . . even a 9 v. battery for up to 300 hours of good listening. Simple step-by-step instructions, large exploded diagrams and fast easy circuit board construction assure your success. Give it a try . . . you'll be surprised how much fun it is!

Kit GR-151A, radio, tool kit & battery, 5 lbs. **$20.65**

GR-61
$44.95



Enjoy The Good Listening Of FM Wherever You Go . . . With This Deluxe Solid-State Portable!

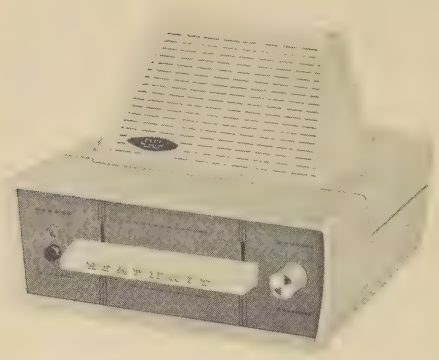
• 10 transistor, 2-diode circuit for instant operation, long trouble-free life • Large 4" x 6" PM speaker for hi-fi sound • Automatic Frequency Control for locked-in reception • Treble-cut tone control assures crisp, clear tone • Accurate vernier tuning • 34" telescopic antenna—headphone jack • Simple circuit board construction • Smart tan simulated leather case with curved beige plastic grill

A REFRESHING IDEA IN PORTABLE LISTENING . . . the quiet, crystal-clear beauty of FM with its vast selection of classical and standard favorites. Hear it all with the rugged, "go-anywhere" GR-61. Other features include terminals for an external antenna, push-pull output stage, headphone jack for private listening or connection to your hi-fi system, and 3 IF stages for full fidelity. Preassembled "front-end," prealigned IF transformers and simple circuit board construction assure easy 8-10 hour assembly. Operates on 6 "C" flashlight batteries (not included) . . . plastic battery holder protects against corrosion.

Kit GR-61, 6 lbs. . . no money dn., $5 mo. **$44.95**

GR-61 SPECIFICATIONS—Tuning Range: 88 mc to 108 mc. **IF Frequency:** 10.7 mc. **Audio Output:** 250 milliwatts. **Loudspeaker:** 4" x 6" permanent magnet. **Tone Control:** Treble-cut. **Battery:** 9 volt, 6 "C" flashlight cells. **Battery Life:** 300 to 500 hours. **Dimensions:** 7¾" H x 10" L x 4" D. (overall). **Styling:** Sun-tan simulated leather case, curved beige plastic grille.

Heathkit® Intercoms & Table Radios



GD-51A

$22.95

Enjoy The Step-Saving Convenience Of A Portable "Wireless" Intercom!

• No connecting wires between units . . . just plug into nearest AC or DC outlet, and you're ready for instant communications • All-transistor circuit—built-in AC power supply • Switch-selected choice of 2 operating frequencies • Compact—fits almost anywhere • Add as many units as you wish anytime • Economical—costs less than 3c a month to operate • Attractive 2-tone beige plastic cabinets . . . match any decor • New variable squelch to hush background noise

Just Plug It In, Push The Press-To-Talk Bar To Talk, release to listen . . . that's all there is to it. Saves you valuable steps and time . . . eliminates annoying shouting. Use any number anywhere . . . kitchen, basement, bedroom . . . as long as they operate on the same 117 v. AC power line.

Ideal For Baby-Sitting & Dictation! Press-to-talk bar has a spring-return to "listen" and a "dictate" hold position for keeping tabs on baby, or for predominately one-way transmissions. All-transistor circuit assures instant operation, long life. Squelch circuit minimizes background noise. Choose a pair!

Kit GD-51-2 (pair), 10 lbs. . . No money down, $5 mo. **$45.90**
Kit GD-51A (one station), 5 lbs. **$22.95**

GD-51A SPECIFICATIONS—Power requirements: 105-125 V. 50/60 cycle AC or DC. **Standby power:** 2.5 watts. **Transmit frequency:** 220 kc & 180 kc (switch selected). **Size:** 6¼'' H x 8'' W x 7½'' D.



Complete System

$44.85

All-Transistor Indoor-Outdoor Intercom System . . . Provides An Extra Measure Of Household Security!

• Master unit handles up to 5 remote stations • Ideal for home, offices, commercial institutions • Weatherproof outdoor remote • Powerful one-watt output for crisp, clear communications • Compact, designer-styled cabinets

Outdoor Remote Lets You Identify Callers before opening your door . . . adds to your safety—Especially reassuring late at night or when you're alone. Also ideal for clinics, hospitals, commercial institutions, factories . . . anywhere a network of inside communication is needed.

Private Call Or Paging! Master unit features selective and all-call switches for private inter-unit communications or paging entire remote group. Also any 2 remotes can communicate. Each remote includes 50′ of 3 conductor wire & matching beige plastic cabinet. Weatherproof outdoor remote features rust-proof grille, specially-coated speaker, doorbell button & 50′ of 3-wire cable. Order the complete set now!

Kit GD-141 Outdoor Remote, 2 lbs. **$5.95**
Kit GD-121 Master Station, 6 lbs. . . No money down, $5 mo. . . **$29.95**
Kit GD-131 Indoor Remote, 4 lbs. **$8.95**

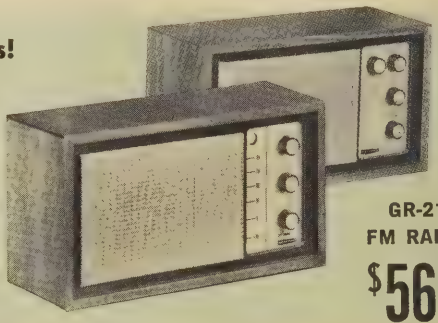
SPECIFICATIONS—Power requirements: 117 v ac 50/60 cycles. 2.5 watts (idling), 3.5 watts (full output). **Transistors:** four 2N1274. **Dimensions:** 6¼'' H x 8'' W x 7½'' D (master), 5'' H x 8'' W x 6'' D (indoor remote), 5¾'' x 4½'' panel size (outdoor remote).

Here's A Matching Pair For FM Stereo That's Ideal For Limited -Space Areas!

• Monophonic FM table radio covers 88 to 108 mc • Receives FM stereo when used with matching GRA-21-1 stereo converter • Large 6" x 9" speakers • Automatic frequency control • Preassembled, prealigned tuning unit speeds assembly • Handsome walnut cabinets

Place Up To 15′ Away For "Concert-Hall" Stereo! Ideal for your rec room, living room, bedroom, or a student's dormitory. GR-21 FM radio may be used separately . . . includes magic "eye" tuning, built-in antenna, lighted dial and safe transformer operation. Both units feature large 6" x 9" dual-cone speakers. Simple controls for mono or stereo FM selection, volume & tone. Each walnut cabinet measures 15" L x 8" H x 6" D.

Kit GR-21, FM Table Radio, 18 lbs. . . no money dn., $6 mo. **$56.95**
Kit GRA-21-1, Stereo Converter, 18 lbs. . . no money dn., $5 mo. **$47.00**

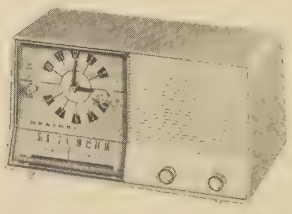


GRA-21-1
STEREO CONVERTER
$47.00

GR-21
FM RADIO
$56.95

GR-121

$28.25



Wake Up In A Happy Mood With This Versatile AM Clock Radio!

• Timer outlet operates household appliances • Sleep switch—radio alarm—output jack for pillow speaker • Safe transformer operation

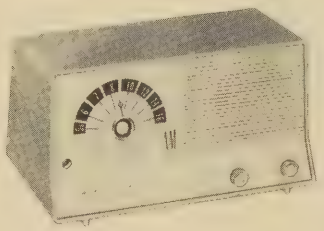
Starts Your Day On The "Bright" Side! Gently wakes you to music, automatically starts the coffee, entertains you throughout the day, then lulls you to sleep at night. 5-tube circuit has built-in antenna and clock/timer with sweep-second hand. Automatically turns itself off at any interval up to an hour. To insure "wake-up" an alarm sounds after 10 minutes. Ivory & beige plastic cabinet. Assembles in 4-6 hours.

Kit GR-121, 8 lbs., no money dn., $5 mo. **$28.25**

GR-121 SPECIFICATIONS — Circuit: 5-tube superheterodyne. **Frequency coverage:** 535-1620 kc. **IF frequency:** 455 kc. **Power supply:** 115 v., 60 cycle, AC only. **Speaker:** 3'' PM. **Controls:** on/off volume, tuning. "Sleep Switch," "Radio Alarm." **Dimensions:** 5'' H x 10'' W x 5'' D.

GR-10

$16.95



AM Table Radio . . . Ideal For Any Room In The House!

• Transformer operated • Superheterodyne circuit • Vernier tuning

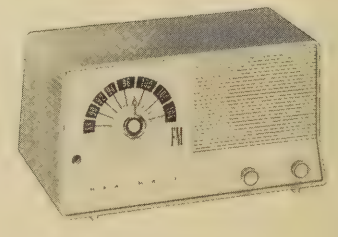
Features Superhet Circuit with automatic volume control and vernier tuning for smooth, easy station selection. Includes built-in antenna plus terminals for external antenna. Handsomely fashioned in ivory & beige plastic cabinet. Safe transformer operation. Add that extra radio now with this easy to build, top performer!

Kit GR-10, 7 lbs. **$16.95**

GR-10 SPECIFICATIONS—Frequency coverage: 535-1620 kc. **IF frequency:** 455 kc. **Power requirements:** 105-125 volts AC 50/60 cps. **Speaker:** 3'' PM. **Antenna:** built-in ferrite rod. **Dimensions:** 5'' H x 10'' W x 5'' D.

GR-11

$23.50



FM Table Radio . . . Full, Rich Sound, Modern Styling!

• Transformer operated • Preassembled, prealigned tuning unit for easy assembly

Add Superb FM Listening To Any Room with this compact, easy-to-build table radio! Five tubes function as seven in its safe, transformer operated circuit. Features line cord antenna for strong local station reception. All components are pre-tuned for fast assembly . . . goes together in only 4 hours. Handsome ivory & beige plastic cabinet!

Kit GR-11, 7 lbs. **$23.50**

GR-11 SPECIFICATIONS—Frequency coverage: 88—108 mc. **IF frequency:** 10.7 mc. **Power requirements:** 105-125 volts AC 50/60 cps. **Speaker:** 3'' PM. **Antenna:** built-in line, provision for external antenna. **Dimensions:** 5'' H x 10'' W x 5'' D.

Heathkit® Photo Aids!

Don't Waste Paper To Get A Perfect Print . . . Get The RIGHT Exposure The FIRST Time With The Fotoval® Computer!

• Accurately & scientifically indicates correct exposure times & photographic paper grades • Cuts darkroom time, reduces paper costs, speeds your enlarging • Quickly produces correctly exposed prints everytime • Gimbal mounting bracket allows installation in any position • Completely safe lighted to permit easy darkroom reading of meter indications • Simple to assemble and operate

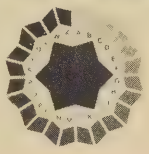
Eliminates Costly Makeovers . . . Saves You Time, Paper & Money! The revolutionary Heath/Mitchell Fotoval Darkroom Computer analyzes any negative, and automatically provides correct exposure times . . . matches negative contrast with printing paper. Guesswork is eliminated through accurate measurement . . . you produce perfect enlargements every time! No long, laborious hours wasted in the darkroom.

Monitors Darkroom Variables . . . Leaves You Free For Creative Work! With a unique 35mm Test Negative, you predetermine accurate exposure for each type of paper stock or variable contrast filter you use. Once correct time is established, there's no need for test strips or wasted paper. Next, choose the desired paper type, and insert the corresponding computer scale into the Fotoval. Place the negative you wish to print in the enlarger. With the Fotoval light-sensitive probe positioned on the desired detailed black, adjust the meter to full scale using the enlarging lens diaphragm. Then meter the most desirable highlight, and read the exposure time & paper grade (or filter) directly from the computer. Expose for the indicated time and develop. That's all there is to it. Fotoval even lets you print now, develop later!

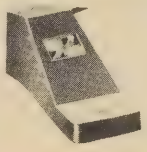
For The Novice As Well As The Professional! The easy operation makes it simple for the beginner to experience remarkable results, even if he's never attempted enlarging before. As easy to build as it is to use. Free descriptive brochure available.

Kit PM-14, 8 lbs. . . . no money dn., $9 mo. **$89.00**





Calibration Negative . . . helps you predetermine correct exposure time for each contrast grade of paper, and best choice for every negative.



Light-Sensitive Probe . . . incorporates all important switching. Measures extremely small light areas when scanning negative for desired highlights. Fits easily in easel corners. Magnetized base.



With The Heathkit Photo Timer, You Control Exposures In Tenths Of A Second!

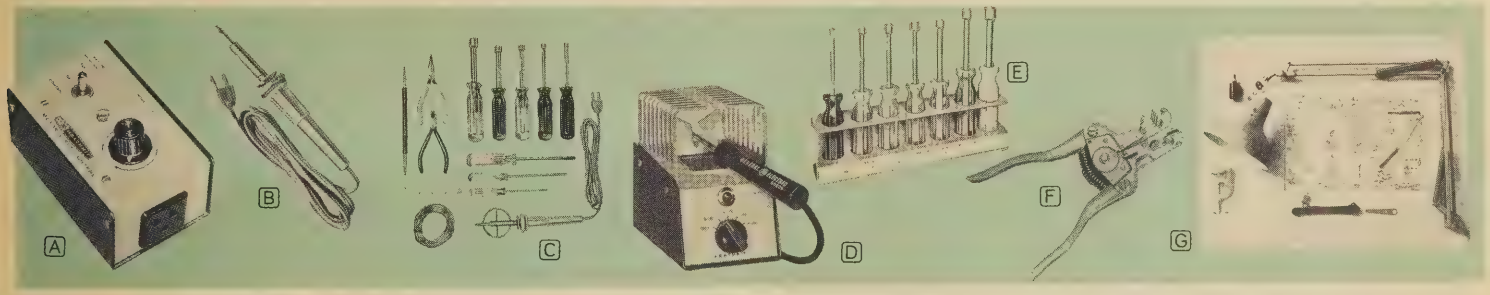
PT-15
$24.95

• Controls exposure time of contact or enlarging printing • 2 switch-selected ranges . . . up to 99 seconds in 1 second steps, or 9.9 seconds in 0.1 second steps . . . permits accurate resetting of any interval • Repeatability accurate within 2% on all settings • Enlarger & safelight AC outlets • All-electronic circuitry . . . no gear mechanisms to wear out • Time-Focus rocker switch to turn enlarger on or off manually • Install on wall, place upright or face up on working surface • Styled to match Fotoval Computer (above) • Easy to assemble & use

Quick & Simple To Use! Simply set the desired exposure time and push the "start" button. The PT-15 Photo Timer turns on the enlarger and extinguishes the safelight. At the end of the pre-selected interval, it automatically turns the enlarger off and the safelight on. To quickly expose more than 1 print, just tap the "start" button to repeat the cycle . . . every exposure will be accurate within 2% of the first interval. A spring-return "stop" switch halts exposure process, if you decide time interval is incorrect.

Kit PT-15, 4 lbs. . . . no money dn., $5 mo. **$24.95**

PT-15 SPECIFICATIONS—Timed cycle: x1.0 Range: 1 to 99 seconds in 1-second steps. x0.1 Range: 0.1 to 9.9 seconds in 0.1-second steps. **AC outlets:** Enlarger and safelight; each outlet provides 105-125 v. AC @ 350 watts maximum (3 amperes). **Accuracy:** Actual timed cycle will be within 5% of time selected. **Repeatability:** All timed cycles at one selected setting within 2% of each other. **Switches:** 0-90 seconds, in 10-second steps; 0-9 seconds in 1 second steps; start pushbutton; Time-Focus; Stop; Range, x1.0 & x0.1; On-Off. **Controls:** x1.0 calibration; x0.1 calibration; sensitivity. **Regulation:** Internal circuits regulated at 150 volts DC by an OA2 regulator tube. **Power requirements:** 105-125 v. AC, 50/60 cps, 6 watts. **Dimensions:** 6⅝" W x 6½" D x 3¼" H overall



Ⓐ Add Longer Life To Drills, Bits, & Blades With A Heathkit Motor Speed Control!

• Adjustable control dials desired motor speed • SCR with feedback circuit slows motor yet maintains high torque power • Use with tools, appliances with universal AC-DC motor rating up to 15 amps only. Not for AC induction motors.
Kit GD-973A, 3 lbs. **$17.50**

Ⓑ "Little Dandy" Soldering Iron . . . Ideal for Kit-Building

• Perfectly balanced, lightweight, easy to handle • Reaches working temperature 2 minutes after plug-in, stays hot • 30-watt heating element • Iron-clad tip won't corrode, doesn't require frequent "tinning"
Model GDP-105, 1 lb. **$5.40**

Ⓒ New Deluxe Tool Set . . . Use For Kit-Building Or Any Fix-It Job!

• Combination wire stripper & diagonal sidecutter • Midget longnose pliers; 3 screwdrivers (3/32", ⅛", 3/16") • "Little Dandy" soldering iron (above) • 5 nut drivers (3/16", ¼", 5/16", ⅜", ½") • Nut starter, soldering aid, radio solder, and "Kit-Builder's Guide" with soldering instructions
Model GH-25, 4 lbs. **$16.95**

Ⓓ Heathkit Soldering Iron—Versatile, Easy To Build & Use

• Lightweight . . . ideal for Kit-building • 6 volt, 25 watt GE midget iron with non-corroding tip • Transformer operated power supply offers selection of 8 heat ranges for every soldering job • Protective metal cage
Kit GH-52, 5 lbs. **$14.95**

Ⓔ Vaco Hollow Shaft Nut Driver Set No. S-700

• 7 drivers—sizes: 3/16", ¼", 5/16", 11/32", ⅜", 7/16", ½" • Hollow shafts for nut installation on switches, controls • Store in self-supporting metal rack • Tough, color-coded plastic handles
Model GDP-204, 3 lbs. **$6.42**

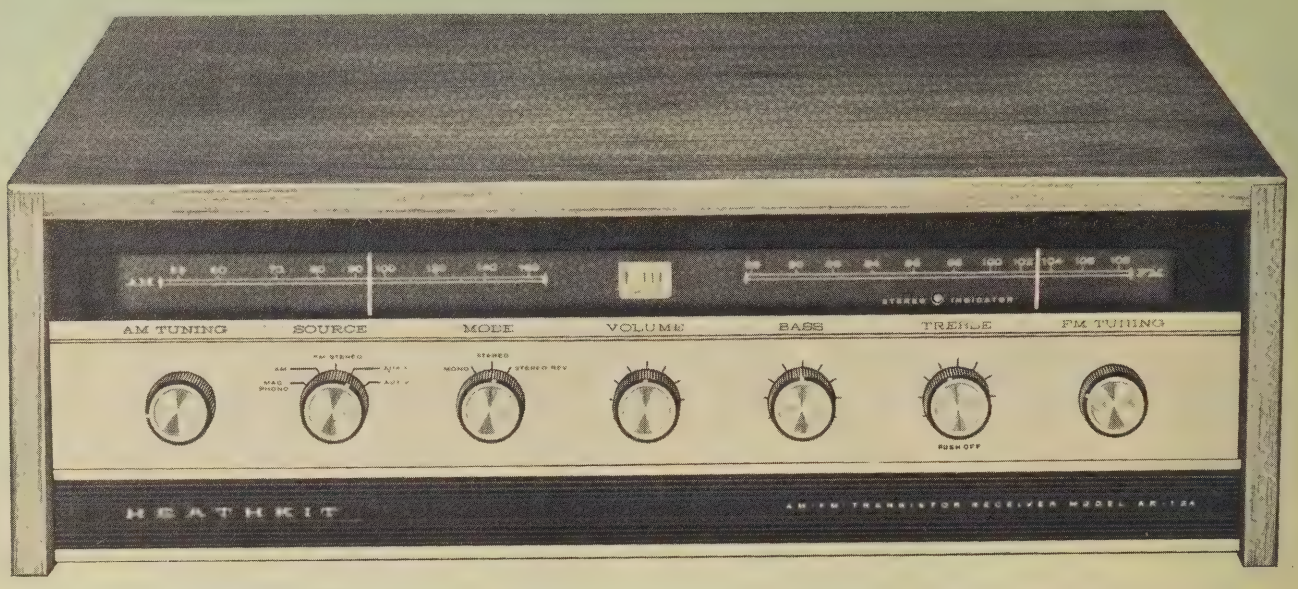
Ⓕ Speedex Wire & Cable Stripper Model 766-1 . . . Save $4.06!

• Simple to use—insert wire into jaws, squeeze handle—insulation comes off just that fast • Graduated jaws accept No. 10, 12, 14, 16, 22 wire • Manufactured by General Cement
Model GDP-663, 2 lbs. . . . Mftrs. list $9.95 . . . . . **Only $5.89**

Ⓖ Z-Lyte 210 Extension Lamp Kit

• Assembled extension arm—just attach socket, shade & cord • 45" reach, 360° sweep • Vented shade • Movable • U.L. approved • Less incandescent bulb
Kit GDP-202, 5 lbs. . . . Mftrs. list $14.50 . . . . . **Only $9.95**

Now Choose From Two Heathkit® All-Transistor



AR-13A

$184.00

Acclaimed By Experts . . . Praised By Owners . . . Heathkit 66-Watt AM/FM/FM Stereo Receiver . . . With All-Transistor Reliability & Performance!

• 46 transistor, 17 diode circuitry for cool, instant, economical operation and the crisp, natural beauty of "transistor sound" • Compact, yet houses two 33-watt power amplifiers . . . two pre-amplifiers . . . and wide-band AM/FM/FM Stereo tuner • Built-in stereo demodulator . . . automatically switches to stereo • Built-in stereo indicator light • Filtered outputs for direct, "beat-free" stereo recording • Provides 66 watts IHF music power, 40 watts rms from 15 to 30,000 cps • Luxurious walnut cabinet styled in Heathkit low-silhouette motif • Preassembled, prealigned "front-end" and AM-FM I.F. strip aid construction

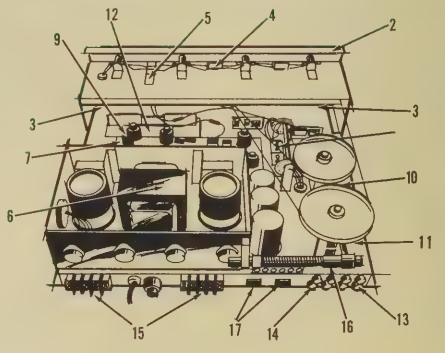
NOTED HI-FI EDITOR, JULIAN D. HIRSCH REVIEWS THE AR-13A! In the Nov. '65 issue of Hi-Fi/Stereo Review, Mr. Hirsch said: *"Unlike many transistor amplifiers, the AR-13A has low IM distortion at low power levels: under 1 per cent up to 4 watts" . . . "The AR-13A had a remarkably flat power response" . . . "Hum and noise were inaudible" . . . The FM tuner proved to be quite sensitive" . . . "drift is negligible" . . . The FM Stereo channel separation was excellent" . . . "It is one of the finest integrated stereo receivers I have seen, comparable to many factory-wired tuners costing far more".* Compare the AR-13A's features!

VERSATILE PERFORMANCE! There's wide-band AM, FM, and FM stereo tuning for reception to delight the most critical ear. It has two preamps. And coupled with its two power amplifiers, the AR-13A provides 66 watts of IHF music power, 40 watts of continuous sine-wave power. All this is housed inside one luxurious, compact walnut cabinet . . . just connect two speakers for a complete stereo system.

THERE ARE PLENTY OF OPERATING CONVENIENCES TOO! A solid-state circuit automatically channels the signal through the built-in stereo adapter when stereo is received. Then the automatic stereo indicator lights. The tape recorder outputs are filtered for direct "beat-free" recording. There are dual-tandem controls for simultaneous adjustment of volume, bass, and treble of both channels; a separate control for balancing both channels; and 3 stereo inputs—mag. phono and two auxiliaries. The AM tuner features a high gain RF stage & a high Q rod antenna. The FM tuner has a built-in line cord antenna plus external antenna connectors.

BUT THAT'S NOT ALL! There's a local-distance switch for optimum reception in all signal areas; an FM squelch control; AFC for drift-free reception; plus flywheel tuning, tuning meter, and lighted AM & FM slide-rule dials for fast, easy station selection. The secondary controls are concealed under the hinged lower section of the gold anodized aluminum front panel to prevent accidental system setting changes. Both FM front-end and the AM-FM I.F. strip are pre-assembled and prealigned to simplify construction.

Kit AR-13A, 35 lbs. . . no money dn., $18 mo. **$184.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
Important: The AR-13A is exempt from any Special System Discount.

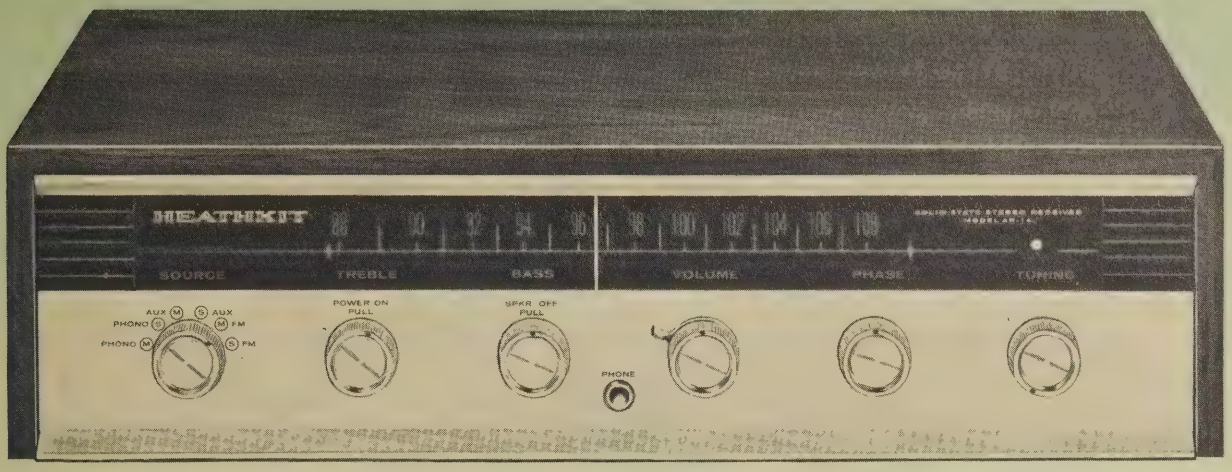


The Latest "Solid-State" Circuitry & Features

1. Pre-assembled pre-aligned AM/FM IF strip **2.** Gold anodized extruded aluminum front panel **3.** Flywheel tuning **4.** Tuning meter **5.** Stereo indicator light **6.** Transformer operated power supply **7.** Built-in stereo demodulator **8.** Built-in line antenna FM (not shown) **9.** 19 kc and 38 kc output filter **10.** Pre-assembled, prealigned FM front end **11.** AM RF amplifier stage **12.** Circuit modules **13.** Three stereo inputs **14.** Low impedance tape recorder outputs **15.** Transformerless 4, 8, and 16 ohm outputs **16.** AM rod antenna **17.** Switched and unswitched line outputs.

AR-13A SPECIFICATIONS—Recommended system mates: Speaker systems: AS-10 or AS-51, ppg. 28-29; separate speaker: AS-183, pg. 30; all changers, ppg. 26-27. **AMPLIFIER: Power output per channel (Heath Rating):** 20 watts/8 ohm load, 13.5 watts/16 ohm load, 9 watts/4 ohm load. (IHF Music Power Output): 33 watts/8 ohm load, 18 watt/16 ohm load, 12 watts/4 ohm load @ 0.7% THD, 1 kc. **Frequency response:** ±1 db from 15 cps to 30 kc @ rated output; ±3 db from 10 cps to 60 kc @ rated output. **Harmonic distortion (at rated output):** Less than 1% @ 20 cps; less than 0.3% @ 1 kc; less than 1% @ 20 kc. **Intermodulation distortion (at rated output):** Less than 1%, 60 & 6,000 cps signal mixed 4:1. **Hum & noise:** Mag. phono, 50 db below rated output; Aux. inputs, 65 db below rated output. **Channel separation:** 40 db @ 20 kc, 60 db @ 1 kc, 40 db @ 20 cps. **Input sensitivity: (for 20 watts output per channel, 8 ohm load):** Mag. phono, 6 MV; Aux. 1, .25 v; Aux. 2, .25 v. **Input impedance:** Mag. phono, 35 K ohm; Aux. 1, 100 K ohm; Aux. 2, 100 K ohm. **Outputs:** 4, 8, & 16 ohm and low impedance tape recorder outputs. **Controls:** 5-position Selector; 3-position Mode; Dual Tandem Volume; Bass & Treble Controls; Balance Control; Phase Switch; Input Level Controls (all inputs except Aux. 2); Push-Pull ON/OFF Switch. **FM: Tuning range:** 88 mc to 108 mc. **IF frequency:** 10.7 mc. **Frequency response:** ±3 db, 20 to 15,000 cps. **Capture ratio:** 3 db. **Antenna:** 300 ohm balanced (internal for local reception). **Quieting sensitivity:** 1½ uv for 20 db of quieting, 2 uv for 30 db of quieting. **Bandwidth:** 325 kc @ 6 db down with 1000 uv input. **Image rejection:** 35 db. **IF rejection:** 70 db. **AM suppression:** 35 db. **Harmonic distortion:** Less than 1%. **STEREO MULTIPLEX: Bandpass:** ±¼ db, 50 to 53,000 cps. **Channel separation:** (SCA Filter Off) 30 db, 50 to 2,000 cps. 25 db at 10 kc. **19 KC 38 KC Suppression:** 45 db down from rated output at 1 kc. **SCA Rejection:** 35 db down from rated output. **AM Tuning range:** 535 to 1620 kc. **IF frequency:** 455 kc. **Sensitivity:** 30 uv @ 600 kc; 9 uv @ 1000 kc. **Bandwidth:** 8 kc @ 6 db down. **Image rejection:** 40 db @ 600 kc. **IF rejection:** 55 db @ 1000 kc. **Harmonic distortion:** Less than 2% with 1000 uv input; 400 cps with 30% modulation. **Hum & noise:** 40 db. **Overall dimensions:** 17" L x 5½" H x 14¾" D. **Power requirements:** 105-125 volts, 50-60 cps AC, 30 watts idling, 110 watts max.

Stereo Receivers—66 Watts or 30 Watts



AR-14
$99.95
(less cabinet)

OVER-Engineered and UNDER-Priced . . . The New Heathkit 30-Watt FM/FM Stereo Receiver Offers Fine Performance For Only $99.95

• 31 transistor, 11 diode circuit for cool, instant operation with the transparent, natural sound only transistors can deliver • ± 1 db, 15 to 50,000 cps, at 10 watts per channel continuous (20 watts total), 15 watts per channel IHF music power (30 watts total) • Wideband FM/FM stereo tuner plus two preamplifiers and two power amplifiers • Front panel stereo headphone jack • Compact—just 3⅞" H x 15¼" W x 12" D • Custom install it in wall, your own cabinet, or either Heath cabinet • Build it in 20 hours

A Better Performer Than Most, A Better Buy Than Any! That's the new AR-14 Transistor Stereo Receiver with advanced solid-state circuitry to bring you sensitive FM stereo, plus 30 watts of IHF music power . . . all in a single compact unit. And all at the low $99.95 price . . . proof that your dollar buys more with Heath!

Compare With Far More Costly Receivers! The AR-14 has 31 transistors and 11 diodes for clean, transparent sound . . . cool, instant operation . . . and long, trouble-free life.

Two preamplifiers and two power amps provide an extremely wide frequency-power response of ±1 db from 15 to 50,000 cps at full power in both channels.

And its sensitive FM tuner eagerly seeks stations, far and near . . . and you'll like the easy way the flywheel tuning dial glides across the band. Built-in AFC automatically locks in stations.

For beat-free tape recordings, the tuner outputs are filtered. And the output power drives all but the most inefficient speaker systems.

A new transformerless complementary output amplifier circuit insures minimum phase shift, widest response, and lowest distortion.

Front-Panel Controls For Full Command! Include a six-position source switch for mono and stereo tuner, phono and an auxiliary; dual concentric volume control to individually adjust each channel for desired loudness; tandem treble control with push-pull power switch; and tandem bass control with push-pull speaker on-off switch for use when listening with stereo headphones from the convenient front panel jack.

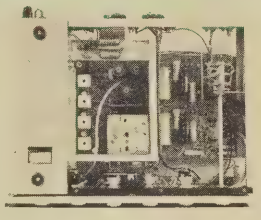
You'll especially appreciate the FM stereo phase control. Just pull out on the control knob and dial for maximum loudness. Then push the control knob in, and you have the best possible stereo separation. There's also a stereo indicator light that automatically signals when stereo is broadcast.

Bookshelf Size, 3-Way Installation Versatility! Measures just 3⅞" H x 15¼" W x 12" D . . . a boon for limited-space areas. Looks sleek and modern, too, with its handsome anodized aluminum front panel that fits neatly in a wall, your custom cabinet, or in either of the optional Heath walnut veneer or beige steel cabinets. Marry it with two speakers (handles 4, 8 or 16 ohm impedances), settle back, and enjoy.

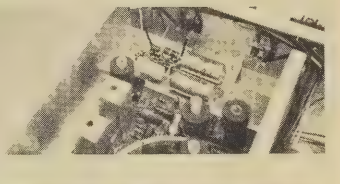
Kit AR-14, 17 lbs., less cab. for custom mtg. . . no money down, $10 mo. **$99.95**
Model AE-55, 6 lbs., walnut veneer cabinet. **$9.95**
Model AE-65, 6 lbs., beige steel cabinet. **$3.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Important: The AR-14 is exempt from any Special System Discount.

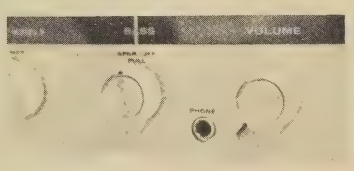
Compact Size . . . only 3⅞" H x 15¼" W x 12" D. Yet contains wideband FM/FM Stereo tuner, two preamplifiers and two power amplifiers. Install in a wall, custom or either Heath cabinet.



Solid-State Power Supply . . . Bridge rectifier and 4000 ufd filter circuit. Insures full power at each frequency throughout its wide 15-50,000 cps range.

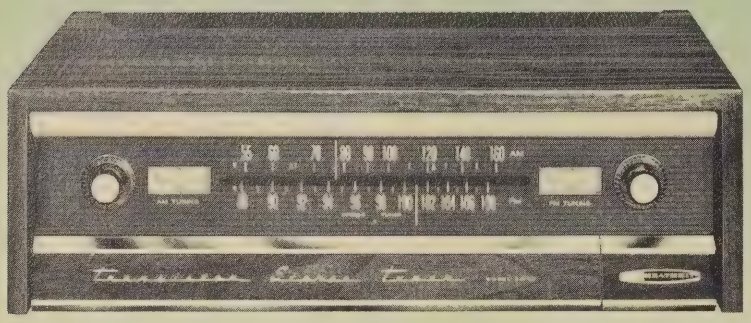


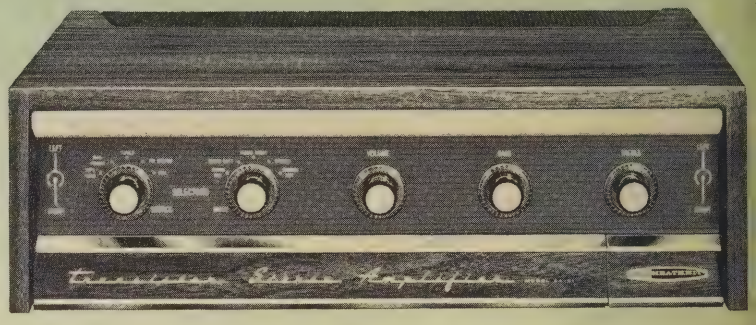
Front Panel Stereo Headphone Jack . . . for the convenience of private listening. Simply plug headphones in, and turn the speakers off with the push-pull on-off switch on the bass control.



AR-14 SPECIFICATIONS—Recommended system mates: All speakers & speaker systems, ppg. 28, 29, 30, except AS-2A & AS-2U; all changers & turntables, ppg. 26 & 27. **AMPLIFIER: Continuous power output:** 10 watts each channel—20 watts total. **Music power output (IHF):** 15 watts per channel. **Speaker output impedance:** 4 through 16 ohm. **Tape output impedance:** 3.5K ohm. **Damping factor:** 50. **Hum and noise:** Phono: —60 db; Auxiliary: —63 db. **Frequency response:** 12 to 60,000 cps ±1 db; 6 to 100,000 cps ±3 db. **Power response:** 15 to 50,000 cps ±1 db; 7 to 90,000 cps ±3 db. **Input sensitivity:** Phono: 4.5 mv; Auxiliary: 300 mv. **Input impedance:** Phono: 47K ohm; Auxiliary: 180K ohm. **Channel separation:** 45 db or better. **Total harmonic distortion (at rated output):** .5% or less @ 1000 cps, 1% or less @ 20 & 20,000 cps. **Intermodulation distortion (at rated output):** Less than 1% (60 & 6,000 cps, 4:1). **Phono equalization:** RIAA. **Transistor complement:** (2) 2N3391* 1st preamp; (7) 2N2712* 2nd, 3rd preamp, 1st pre-driver, electronic filter; (2) 2N3416* 2nd pre-driver; (2) 2N3053* driver; (2) TA2577A output; (2) 2N2148* output. **Diode complement:** (2) 1N3754* Reference diode; (4)F1* Bridge rectifier. **Front panel:** 6-position Source Switch: Mono-Phono; Stereo Phono; Mono Auxiliary; Stereo Auxiliary; Mono FM; Stereo FM; Volume Control; Bass control; Treble Control; Phone Jack. **Rear panel:** Fuse AC Power Socket: Switched & Unswitched. Speaker Terminal Blocks; One Left & One Right Speaker. Ground Terminals: 1; Triple Phone Sockets. **Power requirement:** 105-125 volts 50/60 cps; 32 watts idling; 65 watts full output; (No load on AC power sockets). **Dimensions:** Overall 15¼" W x 3⅞" H x 12" D. **Mounting position:** Horizontal or Vertical; Cutout required 15" x 3½"; Depth required from front of mounting surface 11½". **FM: Tuning range:** 88-108 mc. **Antenna:** Balanced input for external 300 ohm antenna. **Intermediate frequency:** 10.7 mc. **Sensitivity (IHF):** 5 uv for less than 3% total noise, distortion hum —30 db. **Hum & noise (IHF):** —50 db. **Audio frequency response (IHF):** 0 to —3 db from 20 to 15,000 cps. **Harmonic distortion (IHF):** 1% or less. **Image ratio (IHF):** —40 db. **Capture ratio (IHF):** 3 db. **AFC correction:** 150 KC per volt. **AM suppression (IHF):** —35 db. **IF rejection (IHF):** —80 db. **FM STEREO: Separation:** 30 db @ 1 KC. **Transistor complement:** (1) TI XM201* RF amp.; (1) TI XM203* osc.; (1) 2 SA240 mixer; (4) 2N2654 IF amp. & Limiter; (7) 2N2712 multiplex amp, 19 KC amp, emitter follower, 38 KC osc., switching detectors, stereo indicator amps.
*or equivalent.

Your Best Values In Transistor Stereo





• 25-transistor, 9-diode circuit for pure, natural "transistor sound", heat-free operation • AM/FM/FM stereo tuning • Automatic stereo switching • Automatic stereo indicator light • Filtered outputs for direct, beat-free recording • Separate AM & FM tuning meters • Stereo phase control for maximum separation, minimum distortion • Automatic Gain Control for even, steady volume • Versatile installation . . . choose unit without a cabinet, or with either walnut wood cabinet or tan vinyl-clad steel cabinet

AJ-43D $109.00
(less cabinet)

FREE...



Cabinets With Deluxe Stereo Combo!
A pair of AE-11 walnut cabinets are yours FREE . . . when you order both the AA-21D amplifier and matching AJ-43D tuner! Offer expires May 31, 1966.

• 26-transistor, 10-diode circuitry for smooth, uncompromising power response . . . 13 to 25,000 cps ± 1 db at 35 watts rms per channel (50 watts IHF music power) • Concert hall realism, cool instant operation, complete freedom from microphonics • Encapsulated, epoxy-covered modules for fast, simple assembly • Versatile installation . . . choose unit without a cabinet, or with either a walnut wood or tan vinyl-clad steel cabinet . . . matches AJ-43D

AA-21D $137.00
(less cabinet)

Eagerly Seeks Stations Far And Near . . . Deluxe Transistor AM/FM/FM Stereo Tuner!

JUST PUSH THE UNIQUE "PUSH-PUSH" SWITCH AND LISTEN! You hear each voice, each instrument, each note like you've never heard it before. The sound is cleaner, more natural thanks to the AJ-43D's all solid-state circuitry. Notice the freedom from distortion and hum . . . the crisp, full reproduction that only transistors can achieve. Notice the cool, instant operation . . . the complete selection of AM/FM/FM Stereo with hyper-sensitive reception. Notice the price . . . only $109.00 . . . a better-than-ever buy!

DELUXE PERFORMANCE, DELUXE FEATURES . . . like automatic switching to stereo . . . automatic stereo indicator light . . . automatic frequency control for positive tuning . . . emitter-follower outputs for superior fidelity . . . lighted slide rule dial . . . heavy flywheel tuning . . . transformer operated power supply.

EASY TO BUILD. Factory built and aligned "front-end" and 4-stage FM I.F. circuit board gets the job off to a fast start, assures professional performance. You'll enjoy the circuit board construction.

Kit AJ-43D, 15 lbs., less cabinet for custom mounting... no money down, $11 mo.....$109.00
Model AE-11, 8 lbs. Luxurious walnut wood cabinet.....$12.95
Model AE-15, 8 lbs. Tan vinyl-clad steel cabinet.....$6.95

AJ-43D SPECIFICATIONS—FM SECTION (Monaural Only): Tuning range: 88 to 108 mc. **Intermediate frequency:** 10.7 mc. **Antenna:** 300 ohms balanced, internal line antenna provided. **Quieting sensitivity:** (400 cps, 100% mod.) 1.5 uv for 20 db of quieting; 2 uv for 30 db of quieting; 3 uv for full quieting, 40 db. **Image rejection:** 35 db. **IF rejection:** 75 db. **Capture ratio:** 3 db. **AM suppression:** 35 db. **Bandwidth (Complete Tuner):** 325 kc at 6 db down, 1000 uv input. **Detector bandwidth (Peak-to-Peak):** 600 kc. **Harmonic distortion:** Less than 1% (IHF). **Hum & noise:** (Complete tuner) 55 db below full quieting (IHF). **Output impedance:** (Emitter Follower) Variable to 3000 ohms. **Output voltage:** 1 V. @ 1000 uv, 400 cps 100% mod. **FM STEREO CONVERTER SECTION: Converter bandpass:** 50 cps to 53,000 cps, ±¼ db. **Channel separation:** 40 db @ 50 cps to 2,000 cps; 30 db @ 10,000 cps; 20 db @ 15,000 cps. **19 KC suppression:** 50 db down. **38 KC suppression:** 45 db down. **SCA rejection:** 30 db min. 64 kc to 70 kc. **Hum & noise:** 55 db down. **Output voltage:** 1 V. @ 100 uv input, 400 cps, 100% mod. **Output impedance:** (Emitter Follower) Variable to 3000 ohms each channel. **AM SECTION: Tuning range:** 535 to 1620 kc. **Intermediate frequency (IF):** 455 kc. **Sensitivity:** 600 kc, 7 uv for 10 db. S/N; 1000 kc, 4 uv for 10 db S/N ; 1400 kc, 3 uv for 10 db S/N. **Antenna:** Built-in rod with provisions for external straight wire. **Image rejection:** 50 db at 600 kc; 70 db at 1400 kc. **IF rejection:** 55 db at 600 kc.; 65 db at 1400 kc. **10 KC rejection:** 40 db. **Harmonic distortion:** Less than 2%. **Hum & noise:** 30 db below 30% mod. **Output impedance:** (Normal) Variable to 3000 ohms; (Aux.) Variable to 4000 ohms. **Output voltage:** 1 volt nominal. **Dimensions:** 15½'' W x 5¼'' H x 14¼'' D.

NO MONEY DOWN UP TO $300
Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

Matching 100-Watt Transistor Stereo Amplifier . . . Easily Handles Any Source, Drives Any Speaker!

CLEAN, UNCOMPROMISING POWER WITH NO FALTERING AT EITHER END OF THE RESPONSE RANGE. A full 100 watts IHF music power, 70 watts RMS from 13 to 25,000 cps at ± 1 db. Add cool, hum-free operation . . . long, unchanging life . . . transparent, "transistor sound" . . . and host of deluxe operating features. This is the modern performance of the deluxe AA-21D.

COMPLETE CONTROLS On the front panel, those you use most often . . . 5-position source switch, 5-position mode switch, dual-concentric volume control, dual-concentric bass and treble controls. Concealed but accessible behind the hinged lower panel . . . tape-monitor input switch, speaker phase reversal switch, loudness switch (converts volume control to loudness control for compensated low volume levels), plus controls for all inputs.

COMPLETE INPUTS AND OUTPUTS . . . inputs for tapehead, magnetic phono, tuner, stereo tuner, tape monitor, and auxiliary . . . outputs for 4, 8, and 16 ohm speakers plus tape recorder . . . all on the rear chassis panel.

ADVANCED CIRCUITRY. Transformerless output circuit and multiple feedback loops assure fine fidelity, low distortion, minimum phase shift. Easy to build with preamp components encapsulated in 6 epoxy-covered modules.

CHOICE OF INSTALLATION. Install the AA-21D in a wall, custom cabinet, or either Heath tan vinyl covered metal or walnut wood cabinets . . . matches the AJ-43D (opposite).

Kit AA-21D, 23 lbs., everything except a cabinet, no money down, $13 mo.....$137.00
Model AE-11, 8 lbs... walnut wood cabinet.....$12.95
Model AE-15, 8 lbs...tan vinyl-clad steel cabinet.....$6.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-21D SPECIFICATIONS—RECOMMENDED SYSTEM MATES: Separate Speaker: AS-183, pg. 30. Speaker Systems: AS-2AU, AS-10, pg. 28. All changers & turntables, ppg. 26-27. **Power output per channel:** (Heath Rating) 35 watts/8 ohm load, 26 watts/16 ohm load, 18 watts/4 ohm load; (IHF music power output) 50 watts/8 ohm load, 34 watts/16 ohm load, 25 watts/4 ohm load @ 0.7% THD, 1 kc. **Frequency response:** ±1 db from 13 cps to 25 kc @ rated output; ±3 db from 8 cps to 40 kc @ rated output. **Harmonic distortion (At rated output):** Less than 1% @ 20 cps, 0.5% @ 1 kc, 2.0% @ 20 kc. **Intermodulation distortion (At rated output):** Less than 1%, 60 & 6,000 cps signal mixed 4:1. **Hum & noise:** Tapehead, 40 db below rated output; Mag. phono, 45 db below rated output; Aux. inputs, 60 db below rated output; Tape monitor, 7 db below rated output. **Channel separation:** 40 db min. @ 20 kc, 55 db min. @ 1 kc, 50 db min. @ 20 cps. **Input sensitivity:** (For 35 watts output per channel, 8 ohm load) Tapehead, 2 mv, Mag. phono, 3 mv; Tuner, 250 mv; FM Stereo, 250 mv; Aux., 250 mv; Tape Monitor, 0.6 V. **Input impedance:** Tapehead, 60 k ohm; Mag. phono, 30 k ohm; Tuner, 100 k ohm; FM Stereo, 100 k ohm; Aux, 100 k ohm; Tape monitor, 47 k ohm. **Outputs:** 4, 8, & 16 ohms and low impedance tape recorder outputs. **Controls:** 5-pos. Selector (dual-concentric), 5-pos. Mode switch, dual-concentric Volume, Bass & Treble controls, Tape monitor sw., Loudness sw., Phase sw., Input level controls (all inputs except Tape Head & Tape Monitor inputs), Push-Push on/off switch. **Semiconductor complement:** 26 Transistors, 10 diodes. **Power requirements:** 105-125 volts, 50-60 cycles AC. 35 watts idling, no signal; 200 watts, full power out, @ 120 volts with no load on AC receptacles. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15½'' W x 5¼'' H x 14'' D.

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

Separates...From The Leader—Heathkit®!



Modern Sound And Styling . . . Old Fashioned Value . . . All-Transistor AM/FM/FM Stereo Tuner!

• 23-transistor, 8-diode circuitry • Built-in stereo demodulator • AFC for drift-free reception • Stereo indicator light • Filtered stereo outputs • Stereo phase control for maximum separation, minimum distortion • Luxurious walnut cabinet included • Matches AA-22 amplifer

WHAT DO AUDIO EXPERTS SAY ABOUT THE AJ-33A? After testing the AJ-33A, Radio-Electronics summed up its performance like this: *"Compared with other tuners, the Heath AJ-33 gives the impression that it will get any station that can possibly be pulled in. Dead fringe areas prove to be not so dead as other tuners would have us believe! And noise, which previously seemed inevitable with distant reception, is astoundingly low. The quality is indistinguishable for high quality record reproduction."*

ADVANCED FEATURES FOR VERSATILE PERFORMANCE! There's a built-in stereo demodulator; automatic stereo indicator light; AGC for even, steady volume; AFC for drift-free reception; adjustable FM squelch to nullify between-station noise when tuning; a Stereo Phase Control for maximum stereo separation, minimum distortion; filtered Left & Right channel outputs for direct beat-free stereo recording; a tuning meter, illuminated slide-rule dial, and flywheel tuning for precision station selection; and a voltage regulated power supply for high stability.

CONCEALED, EASY-TO-REACH SECONDARY CONTROLS! A hinged lower front panel conceals all secondary controls to avoid accidental system setting changes.

LUXURIOUS WALNUT CABINET INCLUDED! The clean, compact styling of the AJ-33A with pre-built walnut cabinet and extruded brushed gold-anodized aluminum front panel adds a touch of elegance to any room, enhances any decor! And with the prebuilt, prealigned FM "front-end" tuner and AM-FM I.F. circuit board, assembly is fast and simple. Order yours now!

Kit AJ-33A, 16 lbs... no money down, $10 mo.....**$94.50**

AJ-33A SPECIFICATIONS—FM SECTION: Tuning range: 88 to 108 mc. **Intermediate frequency:** 10.7 mc. **Antenna:** 300 ohm balanced or built-in line type. **Output impedance (Emitter follower):** Variable to 3000 ohms. **Output voltage:** 1.5 volts. **Quieting sensitivity:** 2 uv for 20 db; 3 uv for 30 db. **Audio frequency response:** 20-15,000 cycles ±3 db. **Harmonic distortion:** Less than 1%. **Image rejection:** 35 db. **Capture ratio:** 3 db. **AM suppression:** 35 db. **Hum & noise:** 50 db. **MULTIPLEX SECTION: Converter bandpass:** ±¼ db 50 to 53,000 cps. **Channel separation:** 30 db from 50 to 2 kc and 25 db at 10 kc. **AM SECTION: Tuning range:** 535 to 1620 kc. **Intermediate frequency:** 455 kc. **Usable sensitivity:** 8 uv @ 1000 kc. **Antenna:** Built-in rod with provision for external straight wire. **Output voltage:** 0.25 V. with 90% modulation. **Image rejection:** 40 db @ 600 kc. **Harmonic distortion:** Less than 2% (30% mod. @ 1 mv input). **Hum & noise:** 40 db. **GENERAL SPECIFICATIONS: Tuning indicator:** Meter. **Controls:** Tuning; Right Channel level; Left Channel level; FM squelch; Stereo converter—balance, separation and phase. **Switches:** Mode, AFC, Noise filter, SCA filter, local-distance. **Transistors & diodes:** 23 transistors, 8 diodes. **Power supply:** Transformer operated, full wave rectifier. **Power requirements:** 105-125 volts, 50/60 cycles, 7 watts. **Dimensions:** 15⅝" W x 3¾" H x 11½" D.

66-Watt All-Transistor Stereo Amplifier . . . Low-Silhouette Styling, Solid State Performance, Easy-On-The-Budget Price!

• 20-transistor, 10-diode circuit • Delivers a full 66 watts of IHF Music Power • Wide-range response ±1 db, 15 cps to 30 kc • Less than 1% distortion • 5 stereo inputs for any program source • Concealed secondary controls behind hinged lower front panel • Low-silhouette styling • Handsome preassembled walnut cabinet • Perfect match to Heathkit AJ-33A Tuner

THE SOUND ONLY TRANSISTORS CAN GIVE YOU . . . FOR ONLY $99.95! Pure uncompromising sound . . . with instantaneous bursts of power as the music demands. Effortless transient response . . . freedom from microphonics . . . long, unchanging life with no tubes to deteriorate. This is solid-state performance of the AA-22. And it's yours at the typical money-saving Heathkit price.

PLENTY OF POWER! A full 40 watts continuous, 66 watts IHF music power at ±1 db from 15 to 30,000 cps into a regular 8 ohm load. More than enough for any stereo task!

HANDLES ANY PROGRAM SOURCE! 5 stereo inputs accommodate stereo mag. phono, stereo-mono tuners, stereo tape recorders and two auxiliary sources. In addition, there are outputs for 4, 8 & 16 ohm speakers, plus tape recorders. A transformerless output circuit assures greater stability and efficiency. The front panel controls include a 5-position selector switch, a 3-position mode switch, dual-tandem volume, bass and treble controls and a push-push power switch. And the hinged lower front panel conceals all secondary controls such as the input level controls, balance control, and speaker phase switch . . . no need to worry about accidental setting changes.

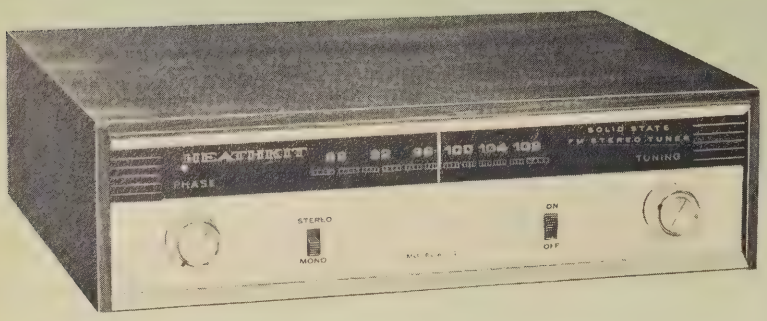
MODERN "LOW-SILHOUETTE" STYLING! Beautiful factory-assembled walnut cabinet with extruded aluminum brushed gold front panel . . . matches the AJ-33A tuner!

Kit AA-22, 22 lbs. . .no money down, $10 mo..... **$99.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-22 SPECIFICATIONS—Recommended system mates: Speaker systems: AS-10 & AS-51, ppg. 28-29; separate speaker: AS-183 pg. 30; all changers, ppg. 26-27; tuner: AJ-33A, left. **Simultaneous power output per channel:** (Heath Rating) 20 watts/8 ohm load, 13 watts/16 ohm load, 9 watts/4 ohm load. (IHF music power output) 33 watts/8 ohm load; 18 watts/16 ohm load, 16 watts/4 ohm load @ 0.7% THD, 1 kc. **Power response:** ±1 db from 15 cps to 30 kc @ rated output. ±3 db from 10 cps to 60 kc @ rated output. **Harmonic distortion:** (at rated output) less than 1% @ 20 cps. 0.3% at 1 kc, 1% @ 20 kc. **Intermodulation distortion:** (at rated output). Less than 1%, 60 and 6,000 cps signal mixed 4:1. **Hum and noise:** Mag phono, 50 db below rated output. Aux inputs 65 db below rated output. **Channel separation:** 40 db. @ 20 cps, 60 db @ 1 kc; 40 db @ 20 kc. **Input sensitivity:** (for 20 watts output per channel, 8-ohm load), Mag phono, 6 mv; Tuner, 250 mv; Tape Recorder, 250 mv; Aux 1, 250 mv; Aux 2, 250 mv. **Input impedance:** Mag phono, 35 K ohm; Tuner, 100 K ohm; Tape Recorder, 100 K ohm; Aux 1, 100 K ohm; Aux 2, 100 K ohm. **Outputs:** 4, 8 and 16 ohm and tape recorder outputs. **Controls:** 5-position selector switch, 3-position mode switch, dual tandem volume, bass and treble controls, phase switch, input level controls, push-on push-off switch. **Semi-conductor complement:** 20 transistors, 10 diodes. **Power requirements:** 105-125 volts, 50-60 cycles AC, 25 watts idling, no signal; 105 watts, full power output @ 120 volts with no load on AC receptacles. **Power outlets:** 2 AC receptacles, 1 switched, 1 unswitched. **Dimensions:** 15⅝" W x 3¾" H x 11⅜" D (allow 1½" extra for rear projections).

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

Lowest Cost Transistor Stereo



AJ-14
$49.95
(less cabinet)

A Word About The AJ-14 Tuner From Owner
John K. Cryer, Little Rock, Arkansas
"Why don't you tell people the truth about your Model AJ-14 FM Stereo Tuner? The quick construction time, fabulous performance, and low price have left me at a loss of words to describe my satisfaction."

• 14-transistor, 5 diode circuit for cool, instant operation, and the natural beauty of transistor sound • Stereo phase control to maximize stereo separation, minimize distortion • 4-stage IF section insures high sensitivity & selectivity • Filtered outputs for direct "beat-free" stereo recording • Automatic stereo indicator light • Prealigned, preassembled "front-end" tuner & one-circuit board for fast, simple assembly • Install any of 3 ways . . . wall, custom or either Heath cabinet

How To Get 1966 Performance At 1949 Prices . . . Build This New Solid-State FM/FM Stereo Tuner for Just $49.95

Why Pay More . . . when you can own this all-transistor FM/FM stereo tuner that performs like expensive factory-built models, yet costs so little! Boasts an IHF sensitivity of 5 mv, distortion of less than 1%, and a stereo response of 50 to 15,000 cps. And you'll like the way it goes together . . . only one circuit board to wire and some parts to mount on the chassis . . . takes from 4 to 6 hours! The "front-end" is preassembled and aligned at the factory to assure the best performance, and to help speed assembly.

Modern Solid-State Circuitry! Delivers a clean sound, without microphonics or heat . . . traits no tube tuner can duplicate. 14 transistors, 5 diodes . . . 3 transistors in the "front-end" tuning section . . . 4 transistors in the 4-stage I.F. section . . . to produce sensitivity and selectivity comparable to much more expensive tuners. Solid-state transformer-operated power supply. Plus filtered outputs for clean tape recordings.

Easy To Operate—Just 4 Controls! An On-Off switch, flywheel Tuning knob, Mono-Stereo switch, and Stereo Phase Control. And you'll like the convenience of an automatic stereo indicator light, edge-lighted slide-rule dial, and external antenna connectors.

Versatile Installation. Its compact 11¾" W x 2⅞" H x 9¾" D size fits almost anywhere. And the extruded anodized aluminum front panel looks great mounted in a wall, your own cabinet, or either Heath cabinet (below).

Kit AJ-14, 6 lbs. . . (less cabinet for custom mounting).
no money down, $5 mo. **$49.95**
Model AE-35, 4 lbs., beige metal cabinet. **$3.50**
Model AE-25, 4 lbs. . . genuine walnut veneer cabinet. **$7.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-14 SPECIFICATIONS (RATED IHF STANDARDS)—Tuning range: 88 to 108 mc. **Antenna input impedance:** 300 ohm, balanced input. **Sensitivity (IHF):** 5 microvolts. **Intermediate frequency:** 10.7 mc. **Audio frequency response (IHF):** —3 db to +0 db. (20 to 15,000 cps). **Hum and noise (IHF):** —50 db. **Output impedance:** 20 K ohm. **Output voltage:** 0.7 volt with a 1,000 microvolt input signal. 400 cps with 100% modulation. **Harmonic distortion (IHF):** 1% or less. **Image ratio (IHF):** —45 db. **Capture ratio (IHF):** 3 db. **IF rejection (IHF):** —80 db. **AFC correction:** 150 kc per volt. **AM suppression (IHF):** —40 db. **Channel separation:** 30 db or more at 1,000 cps. (Channel separation is measured using a 98 mc, 1,000 microvolt input stereo signal that is 100% modulated.) **Dimensions:** With Walnut Cabinet 12½" W x 3½" H x 9⅝" D. **Custom mounting dimensions:** Horizontal or vertical; cutout required 11¾" x 2⅞", depth required from front of mounting surface 9¾".



AA-14
$59.95
(less cabinet)

AA-14 SPECIFICATIONS—Recommended system mates: All speakers & speaker systems, ppg. 28, 29, 30 except AS-2A & AS-2U, all changes & turntables, ppg. 26 & 27. **Continuous power output:** 10 watts each channel—20 watts total. **Music power output (IHF):** 15 watts per channel. **Output impedance:** 4 through 16 ohm. **Damping factor:** 50 or better. **Hum and noise:** Phono: —60 db; Tuner: —70 db; Auxiliary: —63 db. **Frequency response:** 15 to 50,000 cps ±1 db; 6 to 100,000 cps ±3 db. **Power response:** 15 to 50,000 cps ±1 db; 7 to 90,000 cps ±3 db. **Input sensitivity:** Phono: 4.5 mv; Tuner: 300 mv; Auxiliary: 300 mv. **Input impedance:** Phono: 47K ohm; Tuner: 180K ohm; Auxiliary: 180K ohm. **Channel separation:** 45db or better. **Total harmonic distortion (at Full Output):** .5% or less @ 1000 cps, 1% or less @ 20 & 20,000 cps. **Intermodulation distortion (at Rated Output):** Less than 1% (60 and 6,000 cps, 4:1). **Phono equalization:** RIAA. **Front panel:** 6-Position Source Switch: Mono phono; Stereo phono; Mono tuner; Stereo tuner; Mono Auxiliary; Stereo Auxiliary; Volume Control; Bass Control; Treble Control; Phone Jack; Power Switch; Speaker Switch. **Rear panel:** Fuse, AC Power Socket; Switched & Unswitched. Speaker Terminal Block: One Left & One Right Speaker. Ground Terminal: 1. Triple Phono Input Sockets. **Power requirements:** 105-125 volts, 50/60 cps· 20 watts idling; 60 watts full output; (No load on AC power socket). **Dimensions:** With walnut cabinet 12½" W x 3½" H x 9⅝" D. **Custom mounting dimensions:** Horizontal or vertical; cutout required 11¾" x 2⅞"; depth required from front of mounting surface 9¾".

Add This Low Cost 30-Watt Transistor Stereo Amplifier To Your Music System—Costs Just $59.95, Assembles In Just 10 Hours

• 17 transistors, 6 diodes • ±1 db, 15 to 50,000 cps at 10 watts per channel continuous power (20 watts total) or 15 watts per channel IHF Music Power (30 watts total) • Concentric, clutched volume control • Tandem bass and treble controls • Edge-lighted control dial • Front panel stereo headphone jack

Compares To Amplifiers Selling for $100 . . . that's the new AA-14 solid-state 30-Watt stereo amplifier . . . with the ability to handle virtually any source, plus the cool instant operation and clean natural sound of all-transistor circuitry. Compare!

Solid-State Circuitry. Two identical, but separate, preamplifiers and power amplifiers using 17 transistors and 6 diodes produce 30 watts of hi-fi rated power, ±1 db, throughout the extremely wide range of 15 to 50,000 cps . . . remarkable in any amplifier, unheard of until now in an amplifier of this low price. New transformerless complementary output to insure extended response with minimum phase shift and lowest distortion. Power supply is regulated within 10% . . . rarely found even in more expensive amplifiers.

Professional Features. Six-position source switch with stereo and mono positions; concentric clutched volume control for independent adjustment of each channel if necessary for balance; full-range tandem controls for bass and treble boost and cut; edge-lighted dial indicating all functions; front panel mounted stereo headphone jack; off switch for speakers, allowing private headphone listening.

Smart, Compact Styling. At last, truly bookshelf size . . . just 9¾" D x 2⅞" H x 11¾" W. Handsome anodized front panel plus your choice of custom mounting or either of the Heath cabinets below.

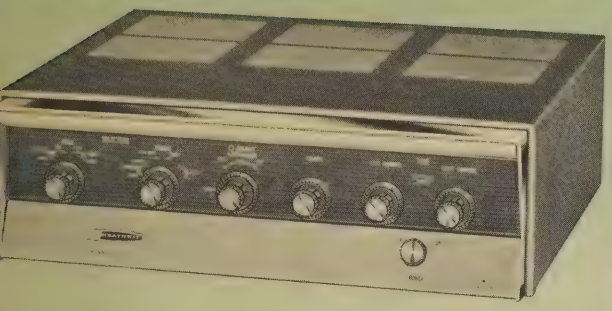
Easy To Build, Easy To Own. Fast circuit board construction . . . pack to performance in 10 hours or less!

Kit AA-14, 11 lbs., less cab. for custom mtg., no money dn., $6 mo. **$59.95**
Model AE-35, 4 lbs. . . beige metal cabinet. **$3.50**
Model AE-25, 4 lbs. . . genuine walnut veneer cabinet. **$7.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

Deluxe "Tube-Type" Stereo

HEATHKIT



AA-100
$84.95

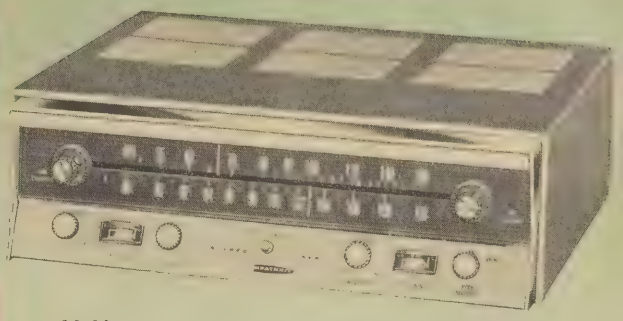
- Hi-Fi rated at 50 watts (25 watts per channel)
- 5 stereo inputs
- Versatile controls
- Mixed channel center speaker output
- Separate monophonic phono input
- Easy circuit board assembly
- Matches the AJ-41 tuner in styling and performance

FREE . . .



With Matching Pair!

An 8-range Heathkit soldering iron (see pg. 17) worth $14.95 is yours FREE . . . when you order both the AA-100 amplifier & matching AJ-41 tuner! Offer expires May 31, 1966.



AJ-41
$112.50

- Built-in FM multiplex adapter
- Broadband circuitry for full fidelity
- Automatic FM Stereo indicator light
- Adjustable Automatic Frequency Control for locked-in reception
- Stereo phase control for maximum separation and lowest distortion
- Adjustable FM squelch circuit for low noise between stations
- Preassembled tuning unit, prealigned coils

Complete Versatility For Command Of Every Stereo Function . . . 60-Watt Stereo Amplifier!

Easily Drives Any System . . . with 50 watts RMS, 60 watts IHF music power from 30 to 15,000 cps at ±1 db. 5 stereo inputs handle mag. phono, FM and AM tuners, tape, and 2 auxiliary sources. In addition, there are outputs for 4, 8 & 16 ohm speakers; "mixed-channel" speaker output for center "fill-in"; preamp and power amp input level controls; hum controls; mode selector; speaker-phase reversal switch; and balance & separation controls. Tape playback heads connect directly without external amplification or equalization. Order with matching AJ-41 tuner and get a $14.95 soldering iron FREE!

Kit AA-100, 34 lbs., no money dn., $9 mo. **$84.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-100 SPECIFICATIONS—Recommended System Mates: Separate Speakers, AS-183, pg. 30; Speaker Systems, AS-10, AS-51, pg. 28 & 29; all changers & turntables, ppg. 26 & 27; Tuner, AJ-41 opposite. **Channels:** 2. **Power output:** 50 watts (25 w. per channel) Heath Hi-Fi Rating: 60 watts (30 w. per channel) IHF Music Power Output (0.7% THD, 1 kc). **Power response:** ±1 db from 30 cps to 15 kc at 25 watts output per channel. **Harmonic distortion:** Less than 0.5% at 25 watts, 1 kc. Less than 2% at 25 watts, 30-15,000 cps (each channel). **Intermodulation distortion:** Less than 1% at 25 watts, 60 and 6,000 cps signals mixed 4:1 (each channel). **Hum and noise:** Mag phono, 55 db below 25 watts output at 6 mv sensitivity. Tape Head, 35 db below 25 watts output. Tuner and aux. inputs 70 db below 25 watts output. **Channel separation:** 42 db min. at 1 kc. **Input sensitivity:** For 25 watts output per channel; mono mag. phono, 1.5 mv; stereo mag. phono, 1.5 mv; tape head, 1 mv; tuner, 0.2v.; aux. 1 & 2, 0.2v. **Outputs:** 4, 8 and 16 ohms; cathode follower tape recorder outputs. **Dimensions:** 5" H x 15¼" W x 13½" D. (allow 1" for cables at rear).

Matching AM/FM/FM Stereo Tuner . . . Satisfies Any Listening Wish!

Beautifully Clear And Quiet FM . . . maximum fidelity AM . . . or the enveloping realism of FM stereo . . . all at your fingertips when you own the AJ-41. Other features include individual AM & FM tuning meters; lighted slide-rule dial & flywheel tuning for precision station selection; cathode follower outputs to minimize hum & high frequency losses; a fidelity switch for choice of normal or maximum AM; and handsome, tan vinyl-clad steel cabinet.

Kit AJ-41, 26 lbs., no money dn., $11 mo. **$112.50**

AJ-41 SPECIFICATIONS—FM: Tuning range: 88 mc to 108 mc. **I. F. frequency:** 10.7 mc. **Frequency response:** ±2 db, 20 to 20,000 cps. **Antenna:** 300 ohm balanced (for internal or local reception). **Output voltage:** Nominal .5 volts (with 3 uv 30% modulation in). **Quieting sensitivity:** 2 uv for 20 db of quieting, 20 uv for full quieting (40 db). **Maximum deviation sensitivity:** 5 uv; (400 cycle 100% modulation). **Deviation sensitivity:** 20 kc (1100 uv in). **Harmonic distortion:** Less than 1% (1100 uv 400 cycle 100% modulation). **Image ratio:** 40 db. **AFC correction factor:** 12 db. **Amplitude modulation suppression:** 25 db. **Hum & Noise:** 40 db below 30% modulation (20 uv in). **SPECIFICATIONS MULTIPLEX—Audio frequency response:** ±2 db, 50 to 15,000 cps. **Sub-carrier bandpass:** ±3 db 23,000 to 53,000 cps. **Channel separation:** 30 db. **Hum & Noise:** —55 db (relative to 1 volt rms output.) **Output impedance:** Cathode follower, variable to 4,000 ohms (each channel). **SPECIFICATIONS AM—Sensitivity, narrow bandwidth position:** 1400 kc, 3 uv; 1000 kc, 4 uv; 600 kc, 8 uv (standard IRE dummy antenna, .1 volt RMS reference output). **Sensitivity change, narrow to broad position:**—5 db. **I.F. bandwidth, narrow:** 14 kc, 6 db down. **Broad:** 20 kc, 6 db down. **Image ratio:** 1400 kc 50 db; 600 kc 75 db. **Harmonic distortion:** Less than 1%. **Hum & noise:** 35 db below 30% modulation (1000 kc unmodulated with 100 uv in). **I. F. rejection ratio:** 1400 kc 42 db; 600 kc 38 db. **Power supply:** Transformer operated, 117 v., 50-60 cycle, 100 watts. **Dimensions:** 5¼" H x 15½" W x 14¼" D.



AA-151
$59.95

FREE . . .



With Matching Pair!

An 8-range Heathkit soldering iron (see pg. 17) worth $14.95 is yours FREE . . . when you order both the AA-151 amplifier & matching AJ-32 tuner! Offer expires May 31, 1966.



AJ-32
$84.95

32-Watt Stereo Amplifier . . . Famous For Its Performance & Value!

- Two hi-fi rated 14-watt channels, preamps and power amps
- Operates stereo or monophonic
- Accepts four stereo music sources
- Front panel controls
- Patented Heath Ultra-Linear® circuit
- Matches Heathkit AJ-12 & AJ-32 Tuners

Kit AA-151, 30 lbs., no money dn., $6 mo. **$59.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-151 SPECIFICATIONS—Recommended System Mates: Separate Speakers, AS-163, pg. 30; Speaker Systems, AS-51, AS-10 pg. 28 & 29; all changers & turntables, ppg. 26 & 27; Tuner, AJ-32 opposite. **Channels:** 2. **Power output:** 28 watts (14 w. per channel) Heath Hi-Fi Rating: 32 watts (16 w. per channel) IHF Music Power Output (0.7% THD, 1 kc). **Power response:** ±1 db from 20 cps to 20 kc at 14 watts output per channel. **Harmonic distortion:** Less than 2%, 30 cps to 15 kc at 14 watts output per channel. **Intermodulation distortion:** Less than 2% at 14 watts output per channel using 60 cps and 6 kc signal mixed 4:1. **Hum and noise:** Mag. phono input, 55 db below 14 watts; Tuner and crystal phono 65 db below 14 watts. **Channel separation:** Better than 45 db. **Input sensitivity:** For 14 watt output each channel (tone controls in "Flat" position); mag. phono, 0.004 volts at 1 kc; crystal phono, 0.2 volts; tuner and aux., 0.2 volts. **Outputs:** 4, 8 and 16 ohms. **Dimensions:** 15¾" W x 5¼" H x 11" D.

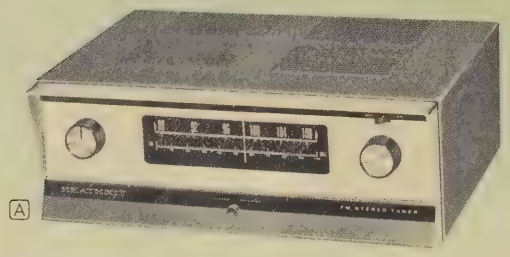
Matching AM/FM Stereo Tuner . . . Attractive In Styling & Price!

- Built-in multiplex converter
- FM Stereo indicator light
- Variable AFC for drift-free reception
- 2 bar-type "Eye" tuning indicators
- Stereo Phase control
- Filtered stereo outputs
- Styling matches AA-151 amplifier

Kit AJ-32, AM-FM Stereo Tuner, 23 lbs., no money dn., $9 mo. . **$84.95**

AJ-32 SPECIFICATIONS—AM Section: Tuning range: 550 kc-1600 kc. **Usable sensitivity** (normal position): 1400 kc—10 microvolts (20 db of quieting); 1000 kc—15 microvolts (20 db of quieting); 600 kc—40 microvolts (20 db of quieting). **FM Section: Tuning range:** 88 mc-108 mc. **Antenna:** Balanced input for external 300 ohm antenna. Internal line antenna. **AM suppression:** —27 db. **Quieting sensitivity:** 20 db—2½ microvolts; 30 db—3½ microvolts; 48 db—30 microvolts (max. quieting). **FM Stereo Converter Section: Audio frequency response:** ±2 db from 50 to 15,000 cps. **Subcarrier bandpass:** ±3 db from 23,000 to 53,000 cps. **Channel separation:** 30 db or more at 1 kc; 25 db or more at 10 kc. **Output impedance** (cathode follower): Variable to 4000 ohm, each channel. **Size:** 5¼" H x 15¾" W x 11" D.

Money-Saving "Tube-Type" Stereo/Hi-Fi!



Ⓐ

AJ-13 $47.00

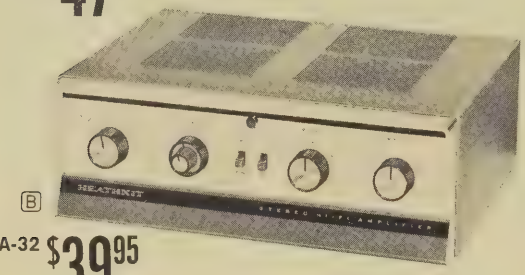
Ⓐ Versatile FM/FM Stereo Tuner . . . Simple Operation, Lowest Cost

• Built-in FM stereo circuitry • FM stereo indicator light • Automatic Frequency Control • Pre-assembled, prealigned "front-end" & point-to-point wiring for fast, easy construction • New mocha brown, beige & black color styling . . . matches AA-32 Amplifier below • Filtered outputs for stereo tape recording • Lighted slide-rule dial, flywheel tuning

Kit AJ-13, 14 lbs. . . no money dn., $5 mo. **$47.00**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-13 SPECIFICATIONS—Tuning range: 88 to 108 mc. **Intermediate frequency:** 10.7 mc. **Quieting sensitivity:** 2½ uv for 20 db of quieting: 3½ uv for 30 db of quieting. **Audio frequency response:** Mono—±1 db from 20 to 20,000 cps. Stereo—± 2 db from 50 to 15,000 cps. **Antenna:** Balanced input for external 300 ohm antenna. **Channel separation:** 25 db or more at 1000 cps. **Front panel controls:** Tuning; selector switch, power off-FM-stereo; AFC switch, off-on. **Dimensions:** Overall: 13½" W x 4-11/16" H x 9½" D.



Ⓑ

AA-32 $39.95

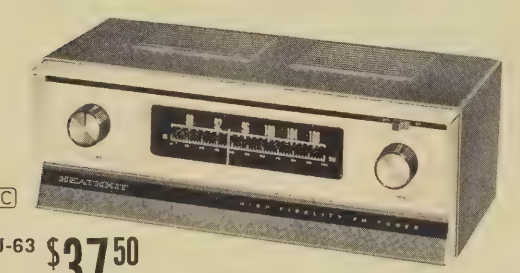
Ⓑ Fine Performance At An Economy Price . . . Matching 20-Watt Stereo Amplifier

• Four stereo inputs . . . magnetic & ceramic cartridges, tuner & auxiliary • Furnishes 16 watts of continuous stereo power—IHF Music power output of 20 watts • Refreshingly styled in mocha brown and beige with black trim accents • Full-range controls . . . found only on more expensive equipment • Easy to build . . . goes from parts to performance in just a few evenings • Two push-pull output stages plus two 4-stage preamps

Kit AA-32, 16 lbs. . . no money dn., $5 mo. **$39.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-32 SPECIFICATIONS—Recommended System Mates: Speaker; AS-133, pg. 30. Speaker systems; AS-22, AS-81, pg. 28. All changers & turntables, pgs. 26 & 27. **Simultaneous power output per channel:** 8 watts (16 watts total); IHF Music Power Output per channel: 10 watts (20 watts total). **Frequency response:** ±1 db from 30 cps to 30,000 cps at rated output. **Harmonic distortion:** (at rated output) 2% @ 30 cps, 0.7% @ 1000 cps, 2% @ 15,000 cps. **Intermodulation distortion:** (at rated output) Less than 3% using 60 and 6000 cps mixed 4:1. **Dimensions:** 13½" W x 4-11/16" H x 9¼" D.



Ⓒ

AJ-63 $37.50

Ⓒ Low Cost FM Tuner . . . Simple To Build, Converts To Stereo!

• Broad-band circuitry, receives stereo with AC-11 Multiplex Converter (below) • Mocha brown & beige color styling with black trim • 5 tube circuit—9 tube function • Automatic Frequency Control for drift-free reception • Easy to build with factory assembled "front-end" tuner, prealigned IF transformers & encapsulated circuit module • Matches AA-13 & AA-23 Amplifiers

Kit AJ-63, 10 lbs., no money dn., $5 mo. **$37.50**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AJ-63 SPECIFICATIONS—Tuning range: 88 to 108 mc. **Quieting sensitivity:** 2.5 uv for 20 db of quieting; 3.5 uv for 30 db of quieting; 25 uv for maximum quieting (38 db). **IF frequency:** 10.7 mc. **Image ratio:** 40 db. **AFC correction factor:** 75 kc per volt. **AM suppression:** 25 db. **Frequency response:** ±2 db, 20-20,000 cps. **Harmonic distortion:** Less than 1.5%, 1100 uv, 400 cycles 100% modulation. **Intermodulation distortion:** Less than 1%, 60 cycles and 6 kc, mixed 4:1; 1100 uv, 30% modulation. **Antenna:** 300 ohms unbalanced. **Output impedance:** 600 ohms (cathode follower). **Output voltage:** Nominal .5 volt (with 30% modulation, 20 uv signal). **Power requirements:** 105-125 volts, 50/60 cycles AC at 30 watts. **Overall dimensions:** 4-11/16" H x 13⅜" W x 7" D.



Ⓓ

AA-13 $29.95



AA-23 $42.95

Ⓔ

AC-11A $23.50



Ⓕ

Ⓓ 16-Watt Mono Amplifier . . . Ideal For That Extra Music System!

• New mocha brown & beige color styling with black trim • Patented Heath Ultra-Linear® circuit • Hi-Fi rated 14-watt output • 30 to 15,000 cps response ±1 db at full rated output • Separate bass & treble controls • Three inputs for any program source • Matches AJ-53 & AJ-63 tuners

Kit AA-13, 17 lbs. . . no money dn., $5 mo. **$29.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-13 SPECIFICATIONS—Recommended System Mates: Speaker: AS-133, pg. 30; Speaker System: AS-22, AS-51. pg. 28; all changers & turntables ppg. 26 & 27. **Power output:** 14 watts Heath Hi-Fi Rating; 16 watts IHF Music Power Output (2% THD, 1 kc). **Frequency response:** ±1 db 30-15,000 cps, 14 watts output. **Harmonic distortion:** Less than 2%, 30 cps to 15 kc at 14 watts output. **Intermodulation distortion:** 2% or less at 14 watts output using 60 and 6000 cps signals, 4:1. **Hum & noise:** Mag. phono input, 50 db below 14 watts; Tuner and crystal phono, 60 db below 14 watts. **Input sensitivity:** For 14 watts output; mag phono, 0.004 v at 1 kc; crystal phono, 0.2 v; tuner 0.25 v with tone controls flat. **Output:** 4, 8 and 16 ohms. **Damping factor:** 10:1. **Controls:** 3-position function selector switch, bass and treble tone controls, volume control. **Power requirements:** 117 v, 50-60 cycles, 55 watts. **Dimensions:** 4-15/16" H x 13½" W x 10½" D.

Ⓔ 30-Watt Mono Amplifier . . . Compact Size, King-Size Performance

• Hi-Fi rated at 25 watts continuous power, 30 watts IHF music power rating • New mocha brown & beige color styling with black trim • Four front-panel selected inputs • ±1 db from 30 to 15,000 cps power response • Separate bass & treble controls • Bookshelf size for limited space installations • Easy to build • Matches AJ-63 & AJ-53 tuners

Kit AA-23, 20 lbs. . . no money dn., $5 mo. **$42.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-23 SPECIFICATIONS—Recommended System Mates: Speakers: AS-183, AS-163, pg. 30; Speaker Systems: AS-22, AS-51, pg. 28; all changers & turntables, ppg. 26 & 27. **Power output:** 25 watts Heath hi-fi rating; 30 watts IHF music power rating (0.7% THD @ 1 kc). **Frequency response:** ±1 db, 30 cps to 15 kc, at 25 watts output. **Harmonic distortion:** Less than 2% at 25 watts output, and less than 0.7% at 1 kc at 25 watts output. **Intermodulation distortion:** Less than 2% at 25 watts using 60 cps and 6000 cps signals 4:1. **Hum & noise:** Microphone, —60 db or better; Mag. Phono, —53 db or better; Xtal Phono, —55 db or better; Auxiliary, —60 db or better. **Input sensitivity:** For 25 watts output with tone controls flat; Microphone, 9 mv; Mag. phono, 5 mv (at 1 kc); Xtal Phono, 120 mv; Auxiliary, 200 mv. **Outputs:** 4, 8, and 16 ohms. **Damping factor:** 9. **Controls:** 4-position selector switch, volume control, bass control and treble control with on/off switch. **Power requirements:** 105-125 volts, 50-60 cps, 120-135 watts. **Power outlets:** 1 AC receptacle, unswitched. **Indicator:** Neon pilot light. **Dimensions:** 13¾" W x 4-15/16" H x 9½" D.

Ⓕ Add Stereo Realism With A Multiplex Adapter

• Use with any FM tuner having multiplex output • Compact . . . fits anywhere • Styled to match Heathkit tuners • Built-in power supply • Easy to build . . . easy to operate

Features Built-In Power Supply with silicon rectifier, 3 tubes, & prealigned coils. Balanced diode detector assures low distortion. Convert now . . . order yours today!

Kit AC-11A, black, 4 lbs. **$23.50**
Kit AC-11B, tan, 5 lbs. **$23.50**

AC-11 SPECIFICATIONS—Audio frequency response: ±2 db 50 to 15,000 cps. **Sub-carrier bandpass:** ±4 db 23,000 to 53,000 cps. **Channel separation:** 30 db. **Hum and noise:** —55 db (relative to 1 volt rms output). **Input impedance:** 470 K ohms. **Output impedance:** 3000 ohms each channel (cathode follower). **Input:** MULTIPLEX (from tuner). **Input signal voltage:** .4 volt minimum (from multiplex output of FM tuner). **Outputs:** LEFT CHANNEL; RIGHT CHANNEL. **Switch and controls:** OFF-ON switch; CHANNEL SEPARATION control; LEFT CHANNEL LEVEL control; RIGHT CHANNEL LEVEL control. **Power requirements:** 117 volts AC 50/60 cps, 12 watts. **Size:** 3⅜" H x 3⅜" W x 9⅞" D.

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

HEATH COMPANY

Benton Harbor, Michigan 49022

ORDER FORM

PHONE • 616-983-3961 **FAX**—BENTON HARBOR, MICHIGAN **TWX**—616-983-3897

1 PLEASE PRINT OR WRITE NAME AND ADDRESS PLAINLY

NAME

ADDRESS

CITY STATE ZIP

PLEASE DO NOT WRITE IN THIS SPACE

2 SHIP TO ANOTHER ADDRESS? Give directions here.

NAME

ADDRESS

CITY STATE ZIP

3 CHECK HOW YOU WANT ORDER SHIPPED ▶ Parcel Post ☐ *Motor Freight ☐ (100 lb. min. chg.) Express ☐

ON EXPRESS ORDERS if station is in different town than your post office address, show name of town where shipment should be sent:

7 TOWN STATE

4 IF YOU HAVE MOVED SINCE YOUR LAST ORDER—write your old address here:

STREET ADDRESS

CITY STATE ZIP

5 TO HELP US SERVE YOU BETTER, will you please answer the following questions?

What type of Heathkit interests you most? ☐ Hi Fi ☐ Instruments ☐ Amateur Radio ☐ Marine ☐ Other

What new Heathkits would you like us to make?

6 IS THIS YOUR FIRST ORDER? ☐ YES ☐ NO

SHD.	B. O.	QUAN.	MODEL	KIT DESCRIPTION	WT.	PRICE EA.	TOTAL

PLEASE DO NOT WRITE IN THIS SPACE

PLEASE DO NOT WRITE IN THIS SPACE

IMPORTANT. Please use a separate sheet for all correspondence, to assure a prompt reply to your letter.

All prices quoted are net F.O.B. Benton Harbor, Michigan, and apply to the United States, F.P.O. and A.P.O. areas.

All prices and specifications subject to change without notice.

Orders F.P.O. and A.P.O. must include sufficient postage.

C.O.D. ORDERS must be accompanied by 20% deposit. Delivering carrier will require cash or certified check in payment of C.O.D. amount.

PARCEL POST ORDERS should include postage for weight shown. Transportation costs for all express or motor freight shipments will be collected at the time of delivery.

SEE REVERSE SIDE for time pay details on orders of $25 or more.

***MOTOR FREIGHT CHARGES** will not be less than $4.91, as you pay for 100 lbs. Since rates vary with localities, consult your local truck line.

PLEASE DO NOT WRITE IN THIS SPACE

8 TYPE OF ORDER (CHECK ONE)

☐ **CASH** Please use registered mail for currency.

☐ **C.O.D.** 20% deposit required.

☐ **TIME PAY.** See reverse side for time pay details on orders of $25 or more.

☐ **ADD ON** If previous time pay customer, give current account number

9 MERCHANDISE ORDERED FROM CAT. NO.

10

A. Allowance if offered	
B. TOTAL AMOUNT OF ORDER.	
C. Add sales tax on all deliveries in the State of Michigan.	
D. Amount for parcel post. Do not remit for express charges.	
E. Amount due from previous order Inv. #	
F. TOTAL AMOUNT	
G. TIME PAY DOWN PAYMENT	
H. 20% C.O.D. deposit	
I. UNPAID BALANCE (total order less down payment or C.O.D. deposit)	

800/62

Open Your Heath Account—Liberal Terms

NOTICE TO BUYER:
Mail Order/Retail Installment Contract

Do not sign this contract before you read it. Under the law you have the following rights among others:

A. To pay off in advance the full amount due.

B. Under certain conditions to redeem the property, if repossessed for a default.

Time Payments are available to anyone in the U.S. or FPO and APO areas. Residents of Puerto Rico and other U. S. possessions, write for details!

LIBERAL TERMS! No money down on orders up to $300 (Down payments reduce monthly payments and carrying charges). 10% down and up to 18 months to pay on orders over $300. Write for details on order over $500.

HERE'S ALL YOU DO . . .

1. Fill out order blank in the catalog.
2. Sign your name in the Time Payment Agreement below.
3. Fill in the Credit Statement and the monthly payment (see chart).
4. Send the above to the Heath Company, Benton Harbor, Michigan . . . we'll take care of the details.

"ADD ON" Purchases—Once your credit is established and you have made at least three payments, you can "add-on" purchases of $25.00 or more with no down payment. List the items you want on the reverse side, check (8) the "add on" box and give your account number. Be sure to sign the Time Payment Agreement and send to us with your original Payment Book.

EASY PAYMENT CHART

Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up to 12 Monthly Payments*
Up to $20.00	$ 2.00	$ 5.00	$250.01-260	$26.00	$24.00
$ 20.01-30	3.00	5.00	260.01-270	27.00	25.00
30.01-40	4.00	5.00	270.01-280	28.00	26.00
40.01-50	5.00	5.00	280.01-290	29.00	27.00
50.01-60	6.00	6.00	290.01-300	30.00	28.00
60.01-70	7.00	7.00	300.01-310	31.00	29.00
70.01-80	8.00	8.00	310.01-320	32.00	30.00
80.01-90	9.00	9.00	320.01-330	33.00	31.00
90.01-100	10.00	10.00	330.01-340	34.00	32.00
100.01-110	11.00	11.00	340.01-350	35.00	33.00
110.01-120	12.00	11.00	350.01-360	36.00	34.00
120.01-130	13.00	12.00	360.01-370	37.00	35.00
130.01-140	14.00	13.00	370.01-380	38.00	36.00
140.01-150	15.00	14.00	380.01-390	39.00	37.00
150.01-160	16.00	15.00	390.01-400	40.00	38.00
160.01-170	17.00	16.00	400.01-410	41.00	39.00
170.01-180	18.00	17.00	410.01-420	42.00	40.00
180.01-190	19.00	18.00	420.01-430	43.00	41.00
190.01-200	20.00	19.00	430.01-440	44.00	42.00
200.01-210	21.00	20.00	440.01-450	45.00	43.00
210.01-220	22.00	21.00	450.01-460	46.00	44.00
220.01-230	23.00	22.00	460.01-470	47.00	45.00
230.01-240	24.00	22.00	470.01-480	48.00	46.00
240.01-250	25.00	23.00	480.01-490	49.00	47.00
			490.01-500	50.00	48.00

*All monthly payments are for the amount shown; last payment is for the odd amount remaining due.

Up to 18 Months	
Carrying Charge	Monthly Payment*
$46.50	$20.00
48.00	21.00
49.50	22.00
51.00	22.00
52.50	23.00
54.00	23.00
55.50	24.00
57.00	25.00
58.50	25.00
60.00	26.00
61.50	27.00
63.00	28.00
64.50	29.00
66.00	29.00
67.50	30.00
69.00	30.00
70.50	31.00
72.00	31.00
73.50	32.00
75.00	32.00

Check if balance is over $300 and 18 mos. desired ☐

TIME PAYMENT AGREEMENT

NOTE: Time payment agreement cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of $_____ on the Easy Payment cost of the equipment on the reverse side. I will pay $_____ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.

Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or repossess the equipment. If you shall repossess, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

If this order is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. This contract is to be governed by the laws of the State of Michigan.

Enter Date_____ Sign Here_____

CREDIT STATEMENT

(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

PRINT
FULL NAME_____ Age_____ Military Serial No. (if serviceman)_____
First Middle Last

WIFE'S NAME_____ Names of Children and ages_____

Residence_____ City_____ State_____ How Long_____

☐ Own or Buying ☐ Rent ☐ Live with Parents No. of Rooms_____ Paid Monthly $_____ Phone No._____

Landlords If Owned Name Mtg. Held By_____ Street_____ City_____ State_____

Previous Address_____ City_____ State_____ How Long_____

Previous Landlord_____ Address_____

Employed by_____ Street_____ City_____ State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Previous Employer_____ Street_____ City_____ State_____ How Long_____

Wife's Employer_____ Street_____ City & State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Other Income—Give Details_____ Total Family Income $_____

Your Bank_____ Address_____ Type of Account_____

CREDIT REFERENCE (Give 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Nearest Relative_____ Address_____ Relationship_____
(Do not list those with whom you are living)

Heathkit Catalogs for your friends . . .

Everyone interested in electronics will want the new Heathkit 1966 Catalog . . . it's the world's biggest kit catalog!

We'll be happy to send your friends their own personal catalogs

---

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

NAME

ADDRESS

CITY & STATE ZIP

PLACE STAMP HERE

HEATH COMPANY

BENTON HARBOR,

MICHIGAN 49022

HEATH COMPANY

Benton Harbor, Michigan 49022

ORDER FORM

PHONE • 616-983-3961 **FAX**—BENTON HARBOR, MICHIGAN **TWX**—616-983-3897

1 PLEASE PRINT OR WRITE NAME AND ADDRESS PLAINLY

NAME

ADDRESS

CITY STATE ZIP

PLEASE DO NOT WRITE IN THIS SPACE

2 SHIP TO ANOTHER ADDRESS? Give directions here.

NAME

ADDRESS

CITY STATE ZIP

3 CHECK HOW YOU WANT ORDER SHIPPED ▶ Parcel Post ☐ *Motor Freight ☐ (100 lb. min. chg.) Express ☐

ON EXPRESS ORDERS if station is in different town than your post office address, show name of town where shipment should be sent:

7 TOWN STATE

4 IF YOU HAVE MOVED SINCE YOUR LAST ORDER—write your old address here:

STREET ADDRESS

CITY STATE ZIP

5 TO HELP US SERVE YOU BETTER, will you please answer the following questions?

What type of Heathkit interests you most? ☐ Hi Fi ☐ Instruments ☐ Amateur Radio ☐ Marine ☐ Other

What new Heathkits would you like us to make?

6 IS THIS YOUR FIRST ORDER? ☐ YES ☐ NO

SHD.	B. O.	QUAN.	MODEL	KIT DESCRIPTION	WT.	PRICE EA.	TOTAL
PLEASE DO NOT WRITE IN THIS SPACE	PLEASE DO NOT WRITE IN THIS SPACE						

IMPORTANT. Please use a separate sheet for all correspondence, to assure a prompt reply to your letter.

All prices quoted are net F.O.B. Benton Harbor, Michigan, and apply to the United States, F.P.O. and A.P.O. areas.

All prices and specifications subject to change without notice.

Orders F.P.O. and A.P.O. must include sufficient postage.

C.O.D. ORDERS must be accompanied by 20% deposit. Delivering carrier will require cash or certified check in payment of C.O.D. amount.

PARCEL POST ORDERS should include postage for weight shown. Transportation costs for all express or motor freight shipments will be collected at the time of delivery.

SEE REVERSE SIDE for time pay details on orders of $25 or more.

***MOTOR FREIGHT CHARGES** will not be less than $4.91, as you pay for 100 lbs. Since rates vary with localities, consult your local truck line.

PLEASE DO NOT WRITE IN THIS SPACE

8 TYPE OF ORDER (CHECK ONE)

☐ **CASH** Please use registered mail for currency.

☐ **C.O.D.** 20% deposit required.

☐ **TIME PAY.** See reverse side for time pay details on orders of $25 or more.

☐ **ADD ON** If previous time pay customer, give current account number

9 MERCHANDISE ORDERED FROM CAT. NO.

10

A. Allowance if offered	
B. TOTAL AMOUNT OF ORDER.	
C. Add sales tax on all deliveries in the State of Michigan.	
D. Amount for parcel post. Do not remit for express charges.	
E. Amount due from previous order Inv. #	
F. TOTAL AMOUNT	
G. TIME PAY DOWN PAYMENT	
H. 20% C.O.D. deposit	
I. UNPAID BALANCE (total order less down payment or C.O.D. deposit)	

800/62

Open Your Heath Account—Liberal Terms

NOTICE TO BUYER:
Mail Order/Retail Installment Contract

Do not sign this contract before you read it. Under the law you have the following rights among others:

A. To pay off in advance the full amount due.

B. Under certain conditions to redeem the property, if repossessed for a default.

Time Payments are available to anyone in the U.S. or FPO and APO areas. Residents of Puerto Rico and other U. S. possessions, write for details!

LIBERAL TERMS! No money down on orders up to $300 (Down payments reduce monthly payments and carrying charges). 10% down and up to 18 months to pay on orders over $300. Write for details on order over $500.

HERE'S ALL YOU DO . . .

1. Fill out order blank in the catalog.
2. Sign your name in the Time Payment Agreement below.
3. Fill in the Credit Statement and the monthly payment (see chart).
4. Send the above to the Heath Company, Benton Harbor, Michigan . . . we'll take care of the details.

"ADD ON" Purchases—Once your credit is established and you have made at least three payments, you can "add-on" purchases of $25.00 or more with no down payment. List the items you want on the reverse side, check (8) the "add on" box and give your account number. Be sure to sign the Time Payment Agreement and send to us with your original Payment Book.

EASY PAYMENT CHART

Unpaid Balance	Carrying Charge	Up To 12 Monthly Payments*	Unpaid Balance	Carrying Charge	Up to 12 Monthly Payments*	*All monthly payments are for the amount shown; last payment is for the odd amount remaining due. Up to 18 Months	
						Carrying Charge	Monthly Payment*
Up to $20.00	$ 2.00	$ 5.00	$250.01-260	$26.00	$24.00		
$ 20.01-30	3.00	5.00	260.01-270	27.00	25.00		
30.01-40	4.00	5.00	270.01-280	28.00	26.00		
40.01-50	5.00	5.00	280.01-290	29.00	27.00		
50.01-60	6.00	6.00	290.01-300	30.00	28.00		
60.01-70	7.00	7.00	300.01-310	31.00	29.00	$46.50	$20.00
70.01-80	8.00	8.00	310.01-320	32.00	30.00	48.00	21.00
80.01-90	9.00	9.00	320.01-330	33.00	31.00	49.50	22.00
90.01-100	10.00	10.00	330.01-340	34.00	32.00	51.00	22.00
100.01-110	11.00	11.00	340.01-350	35.00	33.00	52.50	23.00
110.01-120	12.00	11.00	350.01-360	36.00	34.00	54.00	23.00
120.01-130	13.00	12.00	360.01-370	37.00	35.00	55.50	24.00
130.01-140	14.00	13.00	370.01-380	38.00	36.00	57.00	25.00
140.01-150	15.00	14.00	380.01-390	39.00	37.00	58.50	25.00
150.01-160	16.00	15.00	390.01-400	40.00	38.00	60.00	26.00
160.01-170	17.00	16.00	400.01-410	41.00	39.00	61.50	27.00
170.01-180	18.00	17.00	410.01-420	42.00	40.00	63.00	28.00
180.01-190	19.00	18.00	420.01-430	43.00	41.00	64.50	29.00
190.01-200	20.00	19.00	430.01-440	44.00	42.00	66.00	29.00
200.01-210	21.00	20.00	440.01-450	45.00	43.00	67.50	30.00
210.01-220	22.00	21.00	450.01-460	46.00	44.00	69.00	30.00
220.01-230	23.00	22.00	460.01-470	47.00	45.00	70.50	31.00
230.01-240	24.00	22.00	470.01-480	48.00	46.00	72.00	31.00
240.01-250	25.00	23.00	480.01-490	49.00	47.00	73.50	32.00
			490.01-500	50.00	48.00	75.00	32.00

Check if balance is over $300 and 18 mos. desired ☐

TIME PAYMENT AGREEMENT

NOTE: Time payment agreement cannot be accepted from persons under 21 years of age. If you are under 21, have this form filled out by a person of legal age, regularly employed or engaged in business. He can make the purchase for you, and will be responsible for payment.

TO: HEATH COMPANY BENTON HARBOR, MICHIGAN

Enclosed is a deposit of $_____ on the Easy Payment cost of the equipment on the reverse side. I will pay $_____ each month to you at the above address starting 30 days after shipment, until the total time payment price is paid.

Title to and right of possession of said equipment shall remain with you until all payments have been made. Upon default on any payment due on this contract, the full amount unpaid hereon, at your option, shall become immediately due and payable and you may either hold me liable for said amount or repossess the equipment. If you shall repossess, all payments made may be retained as rent for the use and depreciation of said equipment. The loss, injury or destruction of the equipment after I have received it shall not operate as payment or in any manner release me from any obligation hereunder.

If this order is not accepted, you shall refund the down payment with notice of non-acceptance. Acceptance shall be effected when the equipment designated on the reverse side hereof is shipped to me. I certify that all statements in the Credit Statement set forth below are true and complete and are made for the purpose of obtaining credit. This contract is to be governed by the laws of the State of Michigan.

Enter Date_____ Sign Here_____

CREDIT STATEMENT

(IMPORTANT: Please fill in completely. Omissions and errors cause delays.)

PRINT
FULL NAME_____ Age_____ Military Serial No. (if serviceman)_____
First Middle Last

WIFE'S NAME_____ Names of Children and ages_____

Residence_____ City_____ State_____ How Long_____

☐ Own or Buying ☐ Rent ☐ Live with Parents No. of Rooms_____ Paid Monthly $_____ Phone No._____

Landlords Name If Owned Mtg. Held By_____ Street_____ City_____ State_____

Previous Address_____ City_____ State_____ How Long_____

Previous Landlord_____ Address_____

Employed by_____ Street_____ City_____ State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Previous Employer_____ Street_____ City_____ State_____ How Long_____

Wife's Employer_____ Street_____ City & State_____

Position_____ How Long_____ Dept. or Badge No._____ Salary $_____

Other Income—Give Details_____ Total Family Income $_____

Your Bank_____ Address_____ Type of Account_____

CREDIT REFERENCE (Give 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Nearest Relative_____ Address_____ Relationship_____
(Do not list those with whom you are living)

Sony Sterecorders & Heathkit® Stereo Separates!



GDP-184B **$179.00**

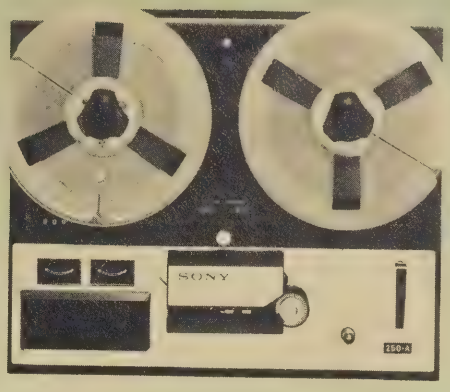
Sony 200-B Sterecorder . . . Detachable Speakers Form Lid For Suitcase Portability, Separate For Best Stereo!

• 4-track stereo & mono record & playback at 7½ & 3¾ ips • Full-range stereo speaker system • Sound-on-sound recording capability • Dynamically balanced capstan flywheel • Two V.U. meters • Automatic Tape Lifter • Pause control and digital tape counter • Full 7" reel capacity • FM stereo inputs • Built-in Stereo preamplifiers & power amplifiers • Two Sony F-96 dynamic microphones

Model GDP-184B, 53 lbs. . . No money down, $17 mo. **$179.00**

GDP-184B SPECIFICATIONS—Power requirements: 70 watts 117 volts, 60 cycles (50 cycles optional). **Tape speeds:** 7½ and 3¾ ips. **Frequency response:** 50-14,000 cps @ 7½ ips; 50-10,000 cps @ 3¾ ips. **Flutter & wow:** Less than 0.19% @ 7½ ips; less than 0.25% @ 3¾ ips. **Signal to noise ratio:** Better than 45 db. **Level indication:** 2 VU meters. **Input provision:** 2 microphone; 2 high level. **Output provisions:** Pre-amp. Two 600 ohm high level; Power amp. Two 8 ohm external speakers & stereo headsets. **Transistor & tube complement:** (2) 2SD64, (1) 6267, (3) 30A5, (3) diodes. **Dimensions:** 15" W x 16" D x 9" H.

SONY® SUPERSCOPE®



GDP-174A **$135.00**

New Sony 250-A All-Transistor Sterecorder . . . Use Horizontally Or Vertically!

• 4 track stereo & mono record & playback at 7½ & 3¾ ips • All-transistor for instant operation, compact size • Operates in both horizontal or vertical positions • Two V.U. meters • Automatically shuts itself off at end of reel • Dynamically balanced capstan flywheel • Automatic tape lifter • Simple single-knob operation for all functions • Attractive walnut cabinet base

Model GDP-174A, 23 lbs. . . no money dn., $13 mo. **$135.00**

GDP-174A SPECIFICATIONS—Power requirements: 115 volts, 60 cycles (50 cycles optional). **Tape speeds:** 7½ and 3¾ ips. **Flutter and wow:** 0.19% @ 7½ ips; 0.25% @ 3¾ ips. **Frequency response:** 50-14,000 cps @ 7½ ips. **Signal to noise ratio:** 50 db or more. **Level indication:** 2 VU meters. **Inputs:** Microphone and line per channel. **Outputs:** High level line per channel. **Dimensions:** 14½" W x 6½" D x 9" H.

Ideal Control Center For Any System . . . Low-Cost Stereo Preamplifier!



AA-141A **$34.95**

• 4 inputs for each channel • 6-position function selector for stereo or mono • Cathode follower outputs for low line loss, less distortion • Built-in power supply permits use with any basic power amplifier • Baxandall-type tone controls for true, natural sound • Frequency response ±1 db from 20 to 20,000 cps • Low impedance outputs for stereo tape recording

Kit AA-141A, 11 lbs. . . no money down, $5 mo. **$34.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-141A SPECIFICATIONS—Channels: 2. **Inputs (each channel):** Mag Phono, Xtal Phono, Aux. 1, Aux. 2. **Outputs (each channel):** Power amplifier, tape recorder. **Frequency response:** (with the volume control at maximum and the Bass and Treble controls set approximately to the mid position): ±1 db from 20 to 20,000 cps. **Harmonic distortion:** (at 2.5 volts rms output, using AUX 1 or 2 input): .1% or less. **Intermediate distortion:** (at 2.5 volts equivalent rms output using AUX 1 or 2 inputs): .1% or less. **Channel separation:** 45 db or better 20 to 20,000 cps. **Hum and noise (below 2.5 volt RMS):** Mag Phono, 55 db (or better); Xtal Phono, 65 db (or better); Aux 1 and 2, 65 db (or better). **Dimensions:** 15¾" W x 5¼" H x 7³⁄₁₆" D (overall).

Less Than A Dollar A Watt . . . 98-Watt Stereo Power Amplifier!



AA-121 **$79.95**

• Furnishes 98 watts IHF music power, or 80 watts RMS power at ±½ db from 20 to 20,000 cps • Heath patented Ultra-Linear® ouput circuit • "Bias-Bal" output balancing circuit • Mixed-channel center speaker output • Individual amplifier gain controls • Ideal for use with AA-141A preamplifier

Kit AA-121, 39 lbs. . . no money down, $8 mo. **$79.95**

Export model available for 115/230 VAC, 50-60 cps; write for prices.

AA-121 SPECIFICATIONS—Recommended System Mates: Speakers: AS-2, AS-2A, AS-10, pg. 31; AS-15, AS-21, pg. 30. **Channels:** 2. **Power output:** 80 watts (40 w. per channel). Heath Hi-Fi Rating; 98 watts (49 w. per channel). IHF Music Power Output (0.7% THD, 1 kc.). **Power response:** ±0.5 db. 20-20,000 cps, at 40 watts output per channel. **Harmonic distortion:** 1.5% or less, 20-20,000 cps at 40 watts output per channel. **Intermodulation distortion:** 0.5% or less at 40 watts output per channel, 60 and 6000 cps mixed 4:1. **Hum and noise:** 85 db below 40 watts output. **Channel separation:** 70 db or better at 1 kc. **Outputs:** 4, 8, 16, and 32 ohms per channel; center speaker terminals can be used with 4, 8 or 16 ohm speakers. **Dimensions:** 7½" H x 15" W x 11" D.

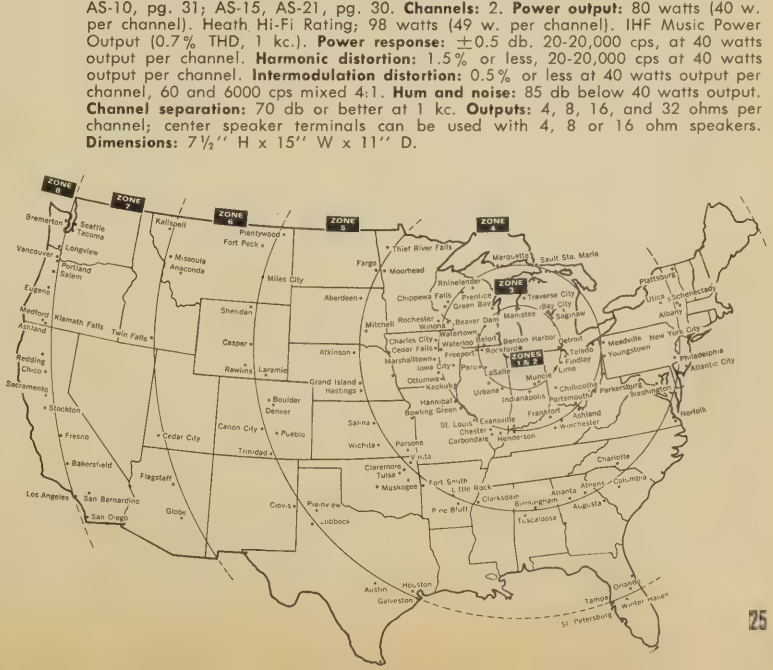
FIND PARCEL POST ZONE ON MAP THEN REFER TO THIS RATE TABLE

Postal Regulations . . . limit parcel post shipments to 20 pounds to zones 3 to 8, and 40 pounds to zones 1 and 2. EXCEPTION: Shipments up to 70 pounds will still be accepted to RFD addresses, and to APO numbers.

Ship. Wt.	Zone 1&2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Ship. Wt.	Zone 1&2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
to 2 lbs.	$.40	$.42	$.46	$.52	$.59	$.66	$.72	12 lbs.	.93	1.06	1.26	1.58	1.90	2.29	2.66
3 lbs.	.46	.49	.55	.64	.73	.83	.93	13 lbs.	.98	1.12	1.33	1.69	2.02	2.44	2.83
4 lbs.	.51	.55	.64	.75	.88	1.01	1.13	14 lbs.	1.03	1.18	1.41	1.79	2.14	2.60	3.01
5 lbs.	.57	.62	.72	.87	1.02	1.18	1.34	15 lbs.	1.08	1.24	1.48	1.89	2.25	2.75	3.18
6 lbs.	.62	.68	.80	.97	1.15	1.34	1.53	16 lbs.	1.13	1.30	1.56	1.99	2.37	2.90	3.36
7 lbs.	.68	.75	.88	1.07	1.28	1.50	1.73	17 lbs.	1.18	1.36	1.64	2.09	2.49	3.06	3.53
8 lbs.	.73	.81	.95	1.18	1.41	1.66	1.92	18 lbs.	1.23	1.42	1.71	2.20	2.61	3.21	3.71
9 lbs.	.78	.87	1.03	1.28	1.53	1.82	2.12	19 lbs.	1.28	1.48	1.79	2.30	2.73	3.36	3.88
10 lbs.	.83	.93	1.10	1.38	1.66	1.98	2.31	20 lbs.	1.32	1.54	1.86	2.40	2.85	3.51	4.06
11 lbs.	.88	1.00	1.18	1.48	1.78	2.14	2.48								

IMPORTANT: Parcel post rate changes enacted April, 1964 are reflected in this table.

INCLUDE MONEY FOR POSTAGE with your orders as we must pay postage on parcel post packages before we can send your merchandise.



Famous-Name Turntables...Choose



ADP-104
$84.51
(with 1c cartridge)

Garrard Type A70 Automatic Turntable!

• Exclusive pusher platform offers automatic play without compromise . . . safest automatic record principle ever developed • Completely new dynamically balanced tone arm for improved tracking capability & resistance to external shock • New adjustable stylus pressure & tracking force • Full-sized, heavy-balanced cast "sandwich" turntable • New adjustable bias compensator • New lightweight shell • New ultra-sensitive "frictionless" Delrin® trip assembly • Double-shielded 4-pole shaded motor • 4 speeds, automatic or manual

ADP-104, 23 lbs., turntable . . . no money dn., $9 mo. **$84.50**
ADP-104, 24 lbs., turntable with choice of 1c offer cartridge below (specify by model no.) . . . no money dn., $9 mo. . . **$84.51**
ADA-61-1, 1 lb., Garrard LRS3 45 rpm spindle. **$3.80**
ADA-63-3, 4 lbs., walnut base, 16-7/16" W x 13-11/16" D x 3" H. **$5.50**

ADP-104 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 & 78 rpm. **Motor:** 4-pole shaded, double shielded. **Tracking:** Will track with "professional" model cartridges. **Color:** Iridescent charcoal gray and chrome. **Wiring:** Stereo, 4-pin/5-wire system w/separate ground connection for hum elimination. **Cables furnished:** Line cord and 2 audio. **Power requirements:** 100-130 volts, 60 cycles AC. **Dimensions:** Requires mounting space 16" W., 13¼" D., 6" above and 2⅞" below top of motor board.



ADP-114
$59.51
(with 1c cartridge)

Garrard AT60 Automatic Turntable!

• Tubular tone arm is counterweight-adjusted & dynamically balanced with a built-in stylus gauge • Automatic intermix record operation • New automatic bias compensator tracks lightest & most compliant cartridges accurately and without distortion • Heavy cast, oversize turntable . . . dynamically balanced and non-magnetic • Lightweight cut-away shell accepts all cartridges • 4 speeds, automatic or manual

ADP-114, 15 lbs., turntable . . . no money dn., $6 mo. **$59.50**
ADP-114, 15 lbs., turntable and choice of any 1c offer cartridge below (specify by model no.) . . . no money dn., $6 mo. **$59.51**
ADA-114-1, 1 lb. . . Garrard LRS10 45 rpm spindle. **$3.80**
ADA-53W, 3 lbs. . . walnut finish base, 14⅝" W x 12¾" D x 3" H. **$4.95**

ADP-114 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 & 78 rpm. **Motor:** 4-pole shaded, double shielded. **Tracking:** Will track all cartridges, including high compliance models. **Color:** Special iridescent charcoal gray. **Wiring:** Stereo, 4-pin/5-wire system w/separate ground connection for hum elimination. **Cables furnished:** Line cord, 2 audio cables. **Power requirements:** 100-130 volts, 60 cycles AC. **Dimensions:** Requires mounting space 15⅜" W x 13⅛" D x 4⅞" below top of motor board.



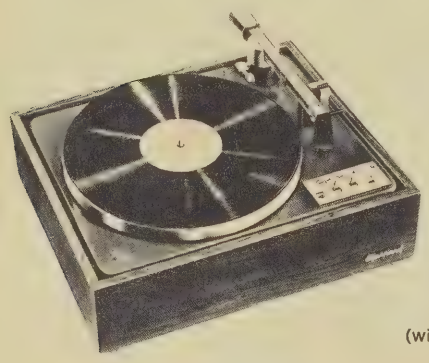
ADP-124
$44.51
(with 1c cartridge)

Garrard Model 50 Automatic Turntable!

• Counter weighted tone arm automatically tracks high quality cartridges . . . a first in popular-priced turntables • New oversize turntable and handsome mat cover for better record support • Compact . . . fits any cabinet or component installation • Plays all 4 speeds automatically or manually • Automatically mixes records of different sizes & same speed • DuPont Delrin® "frictionless" trip mechanisms • Completely assembled

ADP-124, changer only, 13 lbs. . . no money dn., $5 mo. **$44.50**
ADP-124, turntable with choice of 1c offer cartridge below (specify by model no.), 14 lbs . . . no money dn., $5 mo. . **$44.51**
ADA-114-1, 1 lb. Garrard LRS10 45 rpm spindle. **$3.80**
ADA-53W, 3 lbs., Garrard matching walnut base, 14⅝" W x 12¾" D x 3" H. **$4.95**

ADP-124 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 & 78 rpm. **Motor:** 4-pole, hum shielded. **Tracking:** Tracks per cartridge specifications. **Color:** Gray and silver. **Wiring:** Stereo, Amplok plug. **Cables furnished:** Line cord and 2 audio. **Power requirements:** 110-130 volts, 60 cycles AC. **Dimensions:** 14¼" W x 12½" D x 4⅜" above and 2⅞" below top of motor board.



ADP-94
$99.51
(with 1c cartridge)

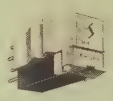
Garrard Lab 80 Stereo Automatic Transcription Turntable!

• Dynamically balanced "Afrormosia wood" tone-arm with integral manual cueing device and adjustable tracking force • New adjustable bias compensator tracks the lightest & most compliant cartridges accurately & without distortion • New massive, non-magnetic 12" turntable with anti-static mat • New isolated motor suspension • Insures professional reproduction of 33⅓ & 45 rpm records • Anti-skate protection • Delrin® "frictionless" trip mechanism • Completely assembled

ADP-94, 25 lbs. . . turntable only . . . no money dn., $10 mo. . . **$99.50**
ADP-94, 26 lbs. . . turntable with choice of any 1c offer cartridge opposite (specify by model no.) . . . no money dn., $10 mo. **$99.51**
ADA-94-1, 1 lb., Garrard LRS9 45 rpm spindle. **$3.80**
ADA-94W, 5 lbs., walnut finish base. . . 16½" W x 13¾" D x 4¼" H. **$6.50**

ADP-94 SPECIFICATIONS—Speeds: 33⅓ & 45 rpm. **Motor:** 4-pole shaded, completely isolated. **Tracking:** Tracks per cartridge specifications. **Color:** Special iridescent charcoal gray. **Wiring:** Stereo, 4-pin, 5-wire system with separate ground connection for hum elimination. **Cables furnished:** Line cord, 2 audio cables. **Power requirements:** 100-130 volts 60 cycles AC. **Dimensions:** 17" W x 14¾" D x 5½" above and 3½" below motor board.

Special 1c Offer Cartridges With Turntable Orders



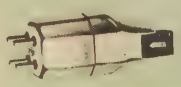
Shure M44-7 15 "Dynetic" — **Specify By Model No.**

AD-85B MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 cps. **Output:** 11 mv per channel. **Separation:** More than 25 db at 1 kc. **Load impedance:** 47,000 ohms per channel. **Stylus:** .018 mm diamond. **Compliance:** 20.0 x 10^{-6} cm per dyne. **Tracking force:** 1½ to 3 grams.
Model AD-85B, 1 lb. **$19.95**



New! Sonotone 9TAFHC-SD "Ceramic"

AD-15K MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 cps. **Output:** .20 volt. **Separation:** 30 db. **Load impedance:** 1 to 5 megohms. **Stylus:** 0.7 mil diamond, 3 mil sapphire. **Compliance:** 15 x 10^{-6} cm/dyne. **Tracking force:** 1.5-3 grams for professional arms; 3-4 grams for changers.
Model AD-15K, 1 lb. **$7.26**



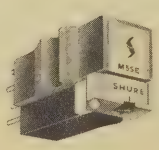
New! Empire 888 "Magnetic"

AD-125G MANUFACTURER'S SPECIFICATIONS—Frequency response: 12-25,000 cps. **Output:** 8 mv/channel. **Separation:** 30 db. **Load Impedance:** 47,000 ohms. **Stylus:** 0.7 mil diamond. **Compliance:** 10 x 10^{-6} cm/dyne. **Tracking Force:** ¾-6 grams. **Tracking Angle:** 15°.
Model AD-125G, 1 lb. **$19.95**



Pickering V15/AT-2 "Magnetic"

AD-105J MANUFACTURER'S SPECIFICATIONS—Frequency response: 20 to 20,000 cps. **Output:** 6.9 mv per cm/sec of recorded level. **Load resistance:** 47,000 ohms. **Stylus:** .7 mil diamond. **Tracking force:** 1 to 4 grams. **Vertical tracking angle:** 15°
Model AD-105J, 1 lb. **$19.95**



New! Shure M55E 15° Stereo Dynetic Cartridge With Elliptical Stylus!

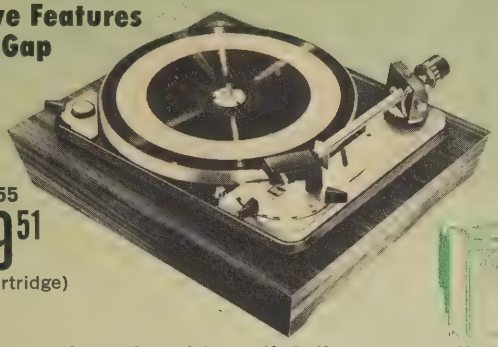
Elliptical diamond stylus and new 15° vertical tracking provide near perfect freedom from distortion, resulting in unmatched purity of sound. Low mass. Scratchproof. Will track at forces of ¾ to 1½ grams. *Only $10 when you order with a Garrard Lab 80, Type A70, or Dual 1009 and 1019 Turntable, if you do not choose a 1c cartridge above!*

Model AD-95R, 1 lb., no money dn., $5 mo. . . **$35.50**

AD-95R MANUFACTURER'S SPECIFICATIONS — Frequency Response: 20 to 20,000 cps. **Output:** 6.6 mv per channel @ 1 kc. **Separation:** Over 25 db @ 1 kc. **Load Impedance:** 47,000 ohms per channel. **Stylus:** Elliptical 0.7 mil diamond. **Compliance:** 25.0 x 10^{-6} cm/dyne. **Tracking force:** ¾ to 1½ grams.

A Cartridge For Only 1¢ More!

New! Dual 1019 Auto-Professional Turntable . . . With 3 Exclusive Features That Close The Gap To Perfection!



ADP-55
$129.51
(with 1c cartridge)

• Exclusive direct dial, continuously variable anti-skating compensation • Exclusive feather-touch cue-control for manual & automatic play • Exclusive single-play spindle that rotates with your records • Cartridge holder adjusts for optimum stylus overhang • Plus all the precision of the Dual 1009 (opposite)

Exclusive New Features! (1) **Direct Dial, Continuously Variable Anti-Skating Compensation** . . . so accurate you can balance stylus force in the groove. Eliminates distortion from unbalanced tracking, ends uneven wear. (2) Feather Touch Cue Control . . . cuing as it should be, dead-center on exact groove intended. (3) Single Play Spindle . . . rotates with record like conventional turntables.

Model ADP-55, turntable only, 20 lbs. . . No money dn., $12 mo. **$129.50**
Model ADP-55, turntable and choice of any 1c cartridge page 26 (specify by model no.) 21 lbs. **$129.51**
ADA-24W, oiled solid walnut base, 3 lbs. **$11.95**
ADA-24-1, 45 rpm spindle, 2 lbs. **$4.80**

ADP-55 SPECIFICATIONS—Speeds: 16⅓, 33⅓, 45 and 78 rpm. Variable over 6% range. **Motor:** High torque continuous pole induction. **Tracking:** Less than 0.2 gram variation from 1st to 10th record. **Turntable:** 7½ lb., dynamically balanced. **Color:** Black/silver. **Cables furnished:** Line cord, 2 audio. **Power requirements:** 100-130 volts, 60 cycles. **Dimensions:** Required mounting space; 10¾" x 12¾" x 6" above and 3" below motor board.

Surpasses Performance Standards Of The Costliest . . . The Dual 1009 Auto/Professional Turntable!





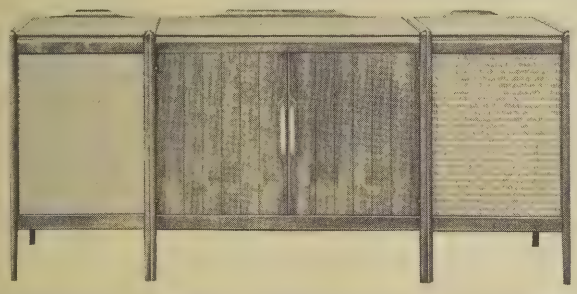
ADP-24
$99.51
(with 1c cartridge)

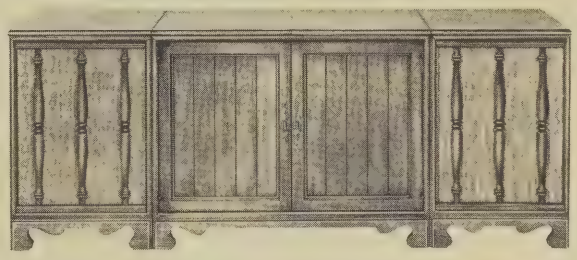
• Automatic tone arm tracks below ½ gram, yet trips at zero • Permits almost 90° tilt without spilling a note • Anti-skate record protection • Less than 2/10 gram stylus force increase from first to last record • 7½ lb. dynamically-balanced platter • 4 speeds, automatic or manual • Automatically shuts off amplifier after play • Can be started manually while record is rotating or at a standstill • Completely assembled

ADP-24, changer only, 22 lbs. . . no money dn., $10 mo. **$99.50**
ADP-24, changer & choice of any 1c offer cartridge, page 26 (specify model no.) 23 lbs. . . no money dn., $10 mo. **$99.51**
ADA-24W, oiled solid walnut base, 3 lbs. **$11.95**
ADA-24-1, 45 rpm spindle, 1 lb. **$4.80**

ADP-24 SPECIFICATIONS—Speeds: 16⅔, 33⅓, 45 and 78 rpm. **Turntable speed:** All 4 speeds accurate within 0.1% with one to ten records. **Motor type:** 4-pole induction, shock & vibration shielded. **Type of drive:** Friction. **Tracking force variations:** Less than 0.2 grams from 1st to 10th record. **Record capacity:** Up to 10 records. **Record sizes:** 7", 10", 12". **Control functions:** Manual Speed Selector; Manual Record Size Selector; Stop/Start Manual/Automatic switch. **Dimensions:** 10¾" x 12¾", 6" clearance above, 3" below. **Power requirements:** 117 VAC, 60 cps.

The Center Of Attraction In Any Room . . . Deluxe Stereo Furniture!





Contemporary Styling With Practical Component Layout . . . Exclusive Heath Stereo/Hi-Fi Cabinetry!

• Custom designed for Heathkit Stereo/Hi-Fi components . . . accommodates most makes • Beautifully finished in modern walnut • Factory assembled, ready to use • Speaker cabinet can be matched to any 12" or 15" speaker for best tone

Clean, Flowing Lines . . . "Sculptured" Accents! This skillfully crafted equipment cabinet is a masterpiece of sumptuous furniture you'll be proud to place in your home. It is solidly constructed of fine furniture woods which are accented with clean, eye-arresting reliefs. Slim, curved brass door handles highlight the "sculptured" effect. And the modern walnut finish adds a richness that reflects good taste. Completely assembled, ready to house your hi-fi components.

Model AE-20W (walnut), 82 lbs. . . no money dn., $10 mo. **$99.50**
Model AEA-12-4, uncut walnut recorder drawer (7" H x 16" W x 16½" D, Wood ¾" thick) 15 lbs. **$19.95**

Matching Speaker Cabinet!
Use with 12" or 15" speakers. Also has 3⅝" x 10⅜" slot for optional horn tweeter. Measures 18½" W x 19" D x 32⅜" H.

Model AE-40W (walnut), 58 lbs. . . no money dn., $5 mo. . Each **$44.95**

AE-20 EQUIPMENT ACCOMMODATIONS AND SIZES—Cabinet, overall: 36" W x 32⅜" H x 19" D. **Changer compartment:** 17" W x 15¾" D, mounting board is uncut and can be adjusted in height to accept all record changers sold by Heath, lid has adjustable friction-loaded support. **Record-tape recorder compartment:** 14½" H x 17" W x 17" D, for record storage; space is convertible with accessory sliding drawers below to accommodate tape recorder. **Shelf compartment:** (2) each 17" W x 6" H x 17" D (inside shelf 14" deep); either shelf accepts any Heath Stereo or Mono tuner, Stereo or Mono preamplifier or stereo or mono combination amplifier. **Power amplifier compartments:** 8¾" H x 17" W x 15⅛" D inside, accepts any Heathkit stereo or mono amplifier.

Early American Stereo Center . . . Custom Designed For Audiophiles With An Eye As Appreciative As Their Ear!

• Beautifully finished in stunning salem-maple • Exclusively styled, a special Heathkit design • Custom-designed for Heathkit stereo components • Holds most hi-fi/stereo components • Factory assembled, ready to use

Crafted Of Specially-Selected Woods! Maple veneers and solids all beautifully finished in popular Salem Maple! "Lancaster-Antique" solid-brass handles. Completely assembled & finished.

Model AE-13S, 77 lbs. . . no money dn., $11 mo. **$115.00**
Model AEA-13-1, uncut recorder drawer (7" H x 16" W x 16½" D, wood ¾" thick), 16 lbs. **$20.00**

Matching Speaker Cabinet!
Use 12" or 15" speakers, has 3⅜" x 10-3/16" slot for optional horn tweeter. Measures 18¼" W x 18¾" D x 28" H.

Model AE-23S, 55 lbs. . . no money dn., $6 mo. . . . . Each **$55.00**

AE-13S EQUIPMENT ACCOMMODATIONS AND SIZES: Cabinet, overall: 28" H x 36" W x 18¾" D. **Changer compartment:** 17" W x 16" D x 5¾" H. Mounting board is uncut and can be adjusted in height to accept all record changers sold by Heath, lid has adjustable friction-loaded support. **Record-tape recorder compartment:** 14¾" H x 17" W x 17¼" D for record storage; space is convertible with accessory sliding drawers to accommodate tape recorder. **Shelf compartments:** Top shelf, 6¾" H x 17" W x 15⅞" D. Middle shelf, 6" H x 17" W x 15⅞" D. Bottom shelf, 9" H x 17" W x 17" D. Shelves accept any Heath stereo or mono tuner, stereo or mono preamplifier, or stereo or mono combination amplifier.

NO MONEY DOWN UP TO $300

Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

Heathkit® Speaker Systems . . .



AS-15
$144.95

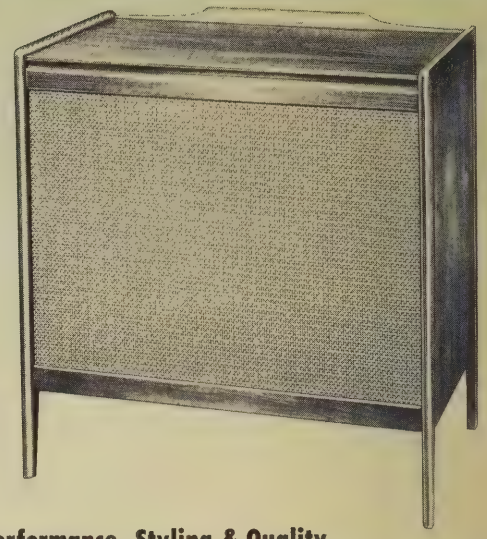
In The Trend To Larger Speaker Systems . . . New Deluxe Heathkit 3-Way System

• 12" high compliance, low resonance woofer • Two special design 2" direct radiator dome-type mid-range speakers • Special design 1" direct radiator dome-type ultra-high frequency tweeter • Response 40 to 20,000 cps • Big voice coils • Heavy ceramic ring magnets • 50-watt program material power capability • High frequency attenuator • Middle frequency attenuator • Preassembled walnut finish enclosure measures 18½" W x 19" D x 32⅜" H • Tube vented, bass reflex design • Styled to match Heath contemporary equipment center

High Compliance Woofer . . . Direct Radiator Mid-Range & Tweeter Components. Both mid-range units have 6¼" frames with 4½", 1 lb. ceramic ring magnets. The ultra-high frequency tweeter has a 4¼" frame with a 2¼", 6 oz. ceramic ring magnet. Its 1" radiating surface is driven by a 1" voice coil. 12" high compliance woofer features a 1½" voice coil and 1 lb. 11 oz. ceramic ring magnet. Free air resonance is 25 cps. Also features 3-way crossover networks, LC and RC types. Crossover points: 1000 cps and 10,000 cps. Floor model cabinet.

Kit AS-15, 82 lbs. . . No money dn., $14 mo. **$144.95**

AS-15 SPECIFICATIONS—Recommended Amplifiers: AR-13A, pg. 18; AR-14, pg. 19; AA-21D, pg. 20; AA-22, pg. 21; AA-100, pg. 23; AA-151, pg. 23; AA-32, pg. 23; AA-13 & AA-23, pg. 24; AA-14, pg. 22. **Frequency Response:** 40 to 20 kc. **Crossover Frequencies:** Low 1000 cps to high frequency 10 kc. **Power Rating:** 50 watts of program material. **Nominal Impedance:** 8 ohms. **Speakers:** (1) 12" Jensen high compliance, low resonance, low frequency; (2) 2" direct radiator dome-type mid-frequency; (1) 1" Jensen direct radiator dome-type ultra high frequency speaker. **Crossover Network: Three Channel:** Low frequency, low pass LC type; Mid-frequency, bandspass LC type; High frequency, high pass RC type filter. **Cabinet:** Walnut finished, tube vented type. **Dimensions:** Overall; 18½" W x 19" D x 32⅜" H.



AS-21W
$239.95

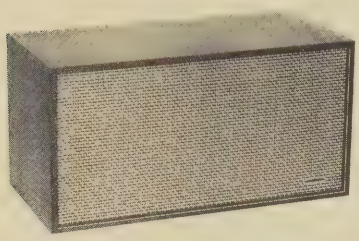
Masterpiece of Performance, Styling & Quality . . . The Famous "Legato Compact"!

• Speakers cover 30-22,000 cps • 800 cps crossover network—completely assembled • Can be driven by as little as 3 watts, handles up to 30 watts • Preassembled walnut-finish cabinet, ready for simple speaker installation • Styling matches AE-20 hi-fi equipment cabinet

Designed For The Discerning. Known by audiophiles the world over for its acoustical excellence—recognized by engineers for achievement in sound technology. Features two Altec Lansing "high compliance" low-frequency speakers that cover the 30 to 800 cps range with a rich, full-bodied tone . . . a specially-designed Altec Lansing exponential horn and high frequency driver combination that recreates the 800 to 22,000 cps range with full fidelity and brilliance. The special 800 cps crossover network is factory assembled, ready for installation in the carefully crafted, acoustically correct cabinet.

Kit AS-21W, 142 lbs. . . no money dn., $22 mo. **$239.95**

AS-21 SPECIFICATIONS—Recommended amplifers: AR-13A, pg. 18; AA-21D, pg. 20; AA-22, pg. 21; AA-100, pg. 23; AA-14, pg. 22; AR-14, pg. 19. **Frequency response:** 30 to 22,000 cps. **Impedance:** 16 ohms. **Capacity:** 30 watts. **Enclosure:** Modified Infinite baffle. **Speakers:** Low frequency, two Altec Lansing 12" high compliance woofers, 1½ lb. magnets; High frequency, one Altec Lansing 800 cycle exponential horn and driver, 53 lb. magnet. **Crossover:** 800 cycle constant K type, assembled. **Control:** high frequency shelving. **Dispersion:** 90° horizontal. **Cabinet:** Factory assembled furniture-grade ¾" plywood. **Dimensions:** 32" W x 19" D x 32½" H.



AS-51U
$39.95

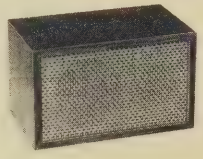
2-Way Hi-Fi Speaker System

• Specially designed speakers—8" woofer and compression-type tweeter with flared exponential horn • Built-in crossover • Tweeter level control • Preassembled unfinished or walnut finish cabinets

Reliable Performance! Covers 50 to 12,000 cps. Use in vertical or horizontal positions. Simply mount speakers and wire crossover network—everything else is pre-built. Works with amplifiers having as little as 3 watts power. Order a pair for stereo.

Kit AS-51U, unfinished, 27 lbs. . . No money dn., $5 mo. **$39.95**
Kit AS-51W, Walnut, 27 lbs. . . No money dn., $5 mo. **$46.95**

AS-51 SPECIFICATIONS—Recommended amplifiers: AR-14, pg. 19; AA-14, pg. 22; AA-32, pg. 23; AA-151, pg. 23; AA-21D, pg. 20; AA-22, pg. 21; AA-100, pg. 23; AA-13 & AA-23, pg. 24. **Frequency response:** 50 to 12,000 cps. **Crossover frequency:** 1600 cps. **Power rating:** Program Material — 25 watts. Single Frequency — 15 watts. **Nominal impedance:** 16 ohms. **Speakers:** Low Frequency—8" Jensen (special design) 6.8 oz. Alnico 5; High Frequency—Jensen compression driver with exponential horn (special design), 4.7 oz. Alnico 5. L-PAD—level control for high frequency driver. **Dimensions:** 11½" H x 23" W x 11¾" D.



AS-81U
$17.50

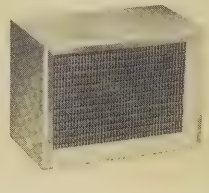
Miniature Hi-Fi 2-Speaker System

• 6" high compliance, mass-loaded woofer • 3" closed back tweeter • Fast, easy assembly • Preassembled unfinished or walnut finish cabinets

Compact Size Ideal For Small Spaces! Yet provides wide 70-14,000 cps response. High compliance woofer with mass-loaded cone matches enclosure. Closed-back cone-type, high frequency tweeter prevents speaker interaction. Assembles in a couple of hours.

Kit AS-81U, unfinished, 10 lbs. **$17.50**
Kit AS-81W, walnut, 10 lbs. **$19.95**

AS-81 SPECIFICATIONS—Recommended amplifers: AA-14, pg. 22, AA-32, pg. 23; AA-13, pg. 24; AA-151, pg. 23; AR-14, pg. 19. **Frequency response:** From 70 to 14,000 cps. **Crossover frequency:** 4000 cps. **Recommended amplifier power:** 6 watts. **Nominal impedance:** 8 ohms. **Cabinet:** Type: infinite. **Dimensions:** 10¾" W x 6½" H x 6-3/16" D; material, ½" veneer plywood. **Speakers:** Tweeter, 3" cone type, 8 ohms, .53 oz. Alnico 5 magnet; Woofer, 5½" cone type, 8 ohms, 10 oz. Syntox No. 6 magnet. **Crossover:** Capacitor type.



AS-41U
$10.95

Lowest Cost Hi-Fi Speaker System

• 6" x 9" extended range dual-cone speaker • Easy assembly • Preassembled unfinished or walnut finish cabinets

Versatile And Easy On The Budget! Fills the bill in a variety of installations . . . place in an extra room, use as an extension speaker to other rooms, or as a center fill-in for a stereo system. Covers 70 to 16,000 cps. Handles 12 watts. Compact in size and price.

Kit AS-41U, unfinished, 8 lbs. **$10.95**
Kit AS-41W, walnut, 8 lbs. **$12.95**

AS-41 SPECIFICATIONS—Recommended amplifers: AA-14, pg. 22; AA-32, pg. 23; AA-151, pg. 23; AA-13, pg. 24; AR-14, pg. 19. **Frequency response:** 70 to 16,000 cps. **Impedance:** 8 ohms. **Capacity:** 12 watts. **Enclosure:** Rear vented box. **Speaker:** 6" x 9" extended range dual cone, 6.8 oz. Alnico 5 magnet. **Cabinet:** Factory assembled, furniture-grade ½" plywood. **Dimensions:** 8" H x 11" W x 6½" D.

NO MONEY DOWN UP TO $300

Build your Heathkit now . . . pay later with the convenient Heath Time Payment Plan. No money down and up to 12 months to pay on orders from $25 to $300 . . . 10% down and up to 18 months on orders from $300 to $500. See Order Blank for details.

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

More Sound For Your Dollar!

HEATHKIT



AS-10U $59.95

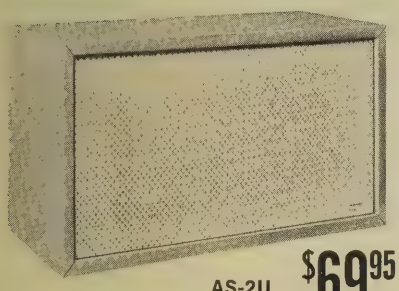
Enjoy The Advantages Of Acoustic Suspension With This Low Cost Speaker System!

• 10" acoustic suspension woofer, two 3½" cone-type tweeters • Takes only 10 watts to drive, yet handles up to 40 watts • Preassembled cabinets, use vertically or horizontally

Easy To Buy, Easy To Drive! Enjoy the extended bass, smooth high frequency response, and the low distortion that has made acoustic suspension systems an audiophile favorite. Covers the 30 to 15,000 cps frequency range. Includes a high frequency level control and L-C crossover network. Handles high wattage program material and is easily driven! Can easily be assembled in 3 hours or less. Choose a pair for stereo.

Kit AS-10U, unfinished, 43 lbs....no money down, $6 mo.....$59.95
Kit AS-10W, walnut, 42 lbs....no money down, $7 mo.....$64.95

AS-10 SPECIFICATIONS—Recommended amplifiers: AA-21D, pg. 20; AA-22, pg. 21; AA-100, pg. 23; AA-151, pg. 23; AA-13 & AA-23; pg. 24; AR-13A, pg. 18. **Frequency response:** 30 to 15,000 cps. **Impedance:** 16 ohms. **Recommended amplifier power:** 10 to 40 watts. **Enclosure:** Infinite baffle, sealed. **Speakers:** Woofer, 10" Acoustic Suspension, Syntox 6 ceramic magnet; Tweeter, two 3½" cone units in dispersed array, 1.47 oz. Alnico 5 magnets. **Crossover:** L-C network, 2250 cps. **Control:** High frequency level. **Dispersion:** 90° horizontal. **Cabinet:** Factory assembled ¾" furniture-grade plywood. **Dimensions:** 13½" H x 24" W x 11½" D.



AS-2U $69.95

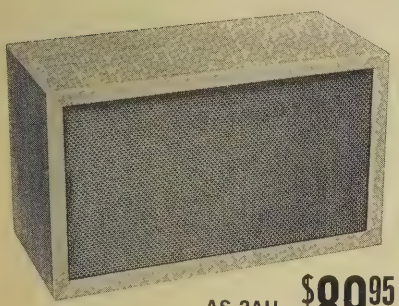
This Versatile Acoustic Suspension System Features Acoustic Research Inc. Woofer!

• 10" acoustic suspension woofer manufactured by Acoustic Research Inc. • Two 5" cross-fired tweeters • Wide-range sound with compact speaker versatility • Easy to build with preassembled cabinet

Distortion-Free Sound In A Compact Enclosure! Fits almost anywhere to accommodate a host of installations. Large 10" woofer with heavy Alnico 5 magnet delivers extended bass response. 2000 cps L-C crossover network plus specially treated and equalized 5" cross-fired tweeters provide unusually clear high frequency distribution. Cabinet is unfinished, so you can apply a finish to match any decor. Order 2 for stereo.

Kit AS-2U, unfinished, 45 lbs....no money down, $7 mo. $69.95

AS-2U SPECIFICATIONS—Recommended amplifiers: AA-21D, pg. 20; AA-100, pg. 23; AA-22, pg. 21; AA-23, pg. 24; AR-13A, pg. 18. **Frequency response:** 40 to 15,000 cps. **Crossover frequency:** 2,000 cps. **Recommended amplifier power:** 20 to 40 watts RMS. **Nominal impedance:** 8 ohms. **Tweeter:** Two 5" cone units, specially treated and equalized, in dispersed array, 2.15 oz. Alnico 5 magnet. **Woofer:** 10" Acoustic Suspension, 1.1 lb. Alnico 5 magnet. Resonant Frequency (mounted) 58 cps. **Crossover:** L-C network. **Horizontal dispersion:** 90°. **Size:** 24" W x 13½" H x 11½" D.



AS-2AU $89.95

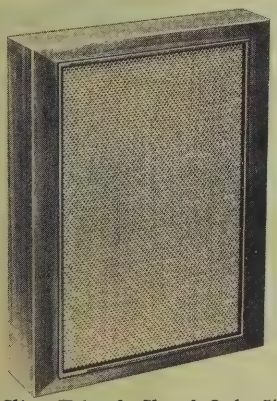
Designed For Today's Advanced Systems . . . Deluxe Acoustic Suspension System!

• Added super tweeter for extended high frequency response • Built-in crossover networks • High frequency level controls • Genuine Acoustic Research Inc. 10" suspension woofer • Two 5" cross-fired tweeters, plus 1⅜" dome-type super-tweeter • Preassembled cabinets

Wide 40-20,000 cps Response! A specially designed super tweeter, dual mid-range, and acoustic suspended woofer combine to reproduce clean, distortion-free sound. Super tweeter and two mid-range cross-fired speakers are controlled by separate level controls. Order a pair for truly superb stereo.

Kit AS-2AU, unfinished, white hardboard, 51 lbs...no money down, $9 mo.....$89.95
Kit AS-2AW, finished walnut, 51 lbs...no money down, $10 mo.....$96.50

AS-2A SPECIFICATIONS—Recommended amplifiers: AA-21D, pg. 20; AA-100, pg. 23; AA-22, pg. 21; AA-23, pg. 24; AR-13A, pg. 18. **Frequency response:** ±5 db, 40 to 20,000 cps. **Impedance:** 8 ohms. **Recommended amplifier power:** 20 watts minimum. **Enclosure:** Infinite baffle, sealed. **Speakers:** Woofer, 10" Acoustic Suspension, 1.1 lb. Alnico 5 magnet; Midrange, two 5" cone units, in dispersed array, 2.15 oz. Alnico 5 magnets; Super-tweeter, 1⅜" dome-type construction. **Crossover:** L-C network, 2000 & 7500 cps. **Controls:** Individual levels for tweeter and mid-range speakers. **Dispersion:** 90° horizontal. **Cabinet:** Factory assembled ¾" furniture-grade plywood. **Dimensions:** 13½" H x 24" W x 11⅜" D.



"Profile" . . . The 3-Way Speaker System That Fits Virtually Anywhere!

• 3 specially-designed speakers—10", 6", 3½" • 5" slim . . . ideal for floor, shelf, or wall installation • Factory assembled, tube-tuned bass reflex cabinet, available unfinished or walnut finish

AS-22U $49.95

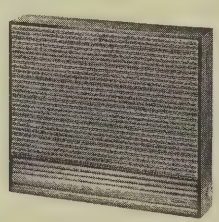
Slim, Trim & Short! Only 5" deep, 25" high and 19½" wide . . . install the Heathkit "Profile" virtually anywhere! Set it on the floor, suspend it on a wall, or tuck it horizontally or vertically into a bookcase or on a shelf. **Superior Sound!** Inverted-design 10" woofer with 1 lb. Alnico magnet, 6" close back speaker to handle mid-ranges, and a 3½" tweeter produces the "highs". Factory assembled cabinets available unfinished or in walnut. Hangers & felt feet included.

Kit AS-22U, unfinished, 34 lbs...no money dn., $5 mo.....$49.95
Kit AS-22W, walnut, 35 lbs...no money dn., $6 mo.....$54.95

AS-22 SPECIFICATIONS—Recommended amplifiers: AR-13A, pg. 18; AA-22, pg. 21; AA-151, pg. 23; AA-21D, pg. 20; AA-100, pg. 23; AA-23 & AA-13, pg. 24; AA-14, pg. 22; AR-14, pg. 19. **Frequency response:** 55 to 12,500 cps. **Crossover frequency:** 2250 cps. **Recommended amplifier power:** 10 to 25 watts. **Nominal impedance:** 8 ohms. **Woofer:** 10" special inverted design 1.1 lb. Alnico V magnet. **Mid-range:** 6" closed back, 2.15 oz. Alnico V magnet. **Tweeter:** 3½" closed back, 2.15 oz. Alnico V magnet. **Cabinet:** Bass reflex, tube-tuned, factory assembled of ¾" furniture-grade plywood. **Dimensions:** 19½" W x 25½" H x 5" D.

Low Cost 2-Way System . . . 3 Speakers In Flat Miniature Wall Mount Cabinet!

• 5¾" woofer and two 3" tweeters • Side mounted level control • Easy to assemble • Compact—ideal for wall, shelf or table • Preassembled unfinished or walnut finish cabinets



AS-193U $22.50

Fits On A Table, Shelf Or Bookcase . . . yet performs like a speaker twice its size. Ideal for rec room extension, too! Boasts a special 5¾" woofer and two 3" tweeters that cover 65-14,000 cps. Use with amplifiers having 4, 8 or 16 ohm impedances and up to 6 watts power—higher rated amplifiers, adjusted for reasonable listening levels also may be used. Simple to build—just mount the three speakers in the preassembled cabinet. Pick a pair for stereo!

Kit AS-193U, unfinished, 12 lbs.....$22.50
Kit AS-193W, walnut, 12 lbs...no money dn., $5 mo.....$24.95

AS-193 SPECIFICATIONS—Recommended amplifiers: AA-14, pg. 22; AA-32, pg. 23; AA-151, pg. 23; AR-14, pg. 19; AA-13, pg. 24. **Impedance:** May be used with amplifier having 4, 8, or 16 ohm output. **Frequency range:** 65-14,000 cps. **Crossover frequency:** 4,000 cps. **Speaker power rating:** 6 watts. Higher rated amplifiers, adjusted for reasonable listening levels, may be used. Adequate room sound with 1 watt to speaker. **Nom. woofer size:** 5½" cone type. **Dimensions:** 12⅞" H x 15⅝" W x 2¾" D.

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

Separate Speakers & Accessories

Our Finest . . . 12" 2-Way High Compliance, Edge-Damped Hi-Fi Speaker!

Connoisseur Quality Throughout! Finest Materials available for tonal realism . . . smooth 20 to 15,000 cps response . . . high compliance edge-damped woofer cone . . . low crossover frequency . . . reflexed-horn high frequency unit . . .1½" & 1" voice coils . . . die-cast metal frame . . . tan & cinnamon color styling; polarized binding posts; 1-year guarantee; high frequency separate level control; cabinet recommendations.

Model AS-183, 15 lbs. . . no money dn., $5 mo. **$49.95**
Model AS-183-2, 30 lbs. . . no money dn., $10 mo. . . . . Special Pair Price **$95.00**

AS-183 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 30 watts. **Frequency response:** 20-15,000 cps. **Cone resonance:** 25 cps. **Magnet weights:** 1¾ lbs., 4.65 oz.

Accommodates 25 Watts . . . 12" 3-Way High Compliance, Edge-Damped Hi-Fi Speaker!

Superb Reproduction Over Entire 35-15,000 cps Range! Features high compliance, edge-damped woofer for deep, rich bass; high compliance cone for mid-range realism; and a special tweeter for crystal clear highs. Polarized speaker terminals provide proper phasing; 1¾ lb. ceramic annular-ring magnet; built-in crossover network; separate high frequency level control; cinnamon & tan color styling; 1-year guarantee.

Model AS-173, 14 lbs. . . no money dn., $5 mo. **$39.95**
Model AS-173-2, 28 lbs. . . no money dn., $8 mo. . . . . Special Pair Price **$76.00**

AS-173 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 25 watts. **Frequency response:** 35-15,000 cps. **Cone resonance:** 40 cps. **Magnet weights:** 1¾ lbs., 2½ oz.

Boasts 3 Radiating Elements . . . 12" 3-Way Coaxial Hi-Fi Speaker! ions

Features True Coaxial Design . . . with 3 separate radiating elements . . . woofer, tweeter and special-design horn tweeter. Mechanical & electrical crossover networks; die-cast frame construction assures precise alignment of speaker elements; high efficiency annular-ring magnets; polarized speaker terminals; separate high frequency level control; 1-year guarantee; cinnamon & tan color styling; cabinet recommendations.

Model AS-163, 12 lbs. . . no money dn., $5 mo. **$29.95**
Model AS-163-2, 24 lbs. . . no money dn., $6 mo. . . . . Special Pair Price **$57.00**

AS-163 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 20 watts. **Frequency response:** 40-15,000 cps. **Cone resonance:** 60 cps. **Magnet weights:** 13 oz., 1 oz. **Voice coil sizes:** 1½" and 1".

Handles 15 Watts, Covers 50-15,000 cps . . . 12" 2-Way Coaxial Hi-Fi Speaker!

Full-Range Sound At Big Savings! True coaxial design features separate woofer & tweeter with a built-in capacitive crossover network. High frequency level control permits balancing of highs and lows to fit room acoustics. Includes rigid die-cast metal frame, polarized binding posts; cinnamon & tan color styling; 1-year guarantee; cabinet recommendations.

Model AS-153, 10 lbs. **$19.95**
Model AS-153-2, 20 lbs. . . no money dn., $5 mo. . . . . Special Pair Price **$38.00**

AS-153 SPECIFICATIONS—Size: 12". **Impedance:** 8 ohms. **Power rating:** 15 watts. **Frequency response:** 50-15,000 cps. **Cone resonance:** 60 cps. **Magnet weights:** 10 oz., 1.47 oz. **Voice coil sizes:** 1" and 9/16".

Have A Space Problem? Then Choose This 8" 2-Way Coaxial Hi-Fi Speaker!

Top Value In An 8" Speaker! Features separate cone woofer & tweeter, plus built-in capacitive crossover network and high frequency level control. Only 3⅝" deep . . . ideal for limited space enclosures. Has die-cast frame; polarized binding posts; cinnamon & tan color styling; 1-year guarantee; cabinet recommendations.

Model AS-133, 6 lbs. **$14.95**
Model AS-133-2, 12 lbs. . . no money dn., $5 mo. . . . . Special Pair Price **$28.50**

AS-133 SPECIFICATIONS—Size: 8". **Impedance:** 8 ohms. **Power rating:** 12 watts. **Frequency response:** 50-14,000 cps. **Cone resonance:** 70 cps. **Magnet weights:** 10 oz., 0.68 oz. **Voice coil sizes:** 1" and 9/16".

Another Space-Saver . . . Low Cost 8" Dual-Cone Hi-Fi Speaker!

Ideal Where Space Is At A Premium! Only 3½" deep . . . perfect for "in-wall" installations & shallow cabinets. Features die-cast frame; polarized binding posts; dual-cone design; 10-ounce annular-ring magnet; cinnamon & tan color styling; 1-year guarantee; cabinet recommendations.

Model AS-123, 5 lbs. **$9.95**
Model AS-123-2, 10 lbs. . . Special Pair Price. **$19.00**

AS-123 SPECIFICATIONS—Size: 8". **Impedance:** 8 ohms. **Power rating:** 12 watts. **Frequency response:** 50-12,000 cps. **Cone resonance:** 70 cps. **Magnet weight:** 10 oz. **Voice coil size:** 1".



Enjoy Added Realism & Armchair Comfort With These Stereo Accessories!



A New! Telex "Adjustatone" Stereo Headset

Big 3½" speakers . . . over 7 sq. in. of cone area . . . deliver wide response. Exclusive "Forward Sound" acoustic effect puts stereo up front for "audience seat" listening. Adjust to normal "in-head" stereo by simply reversing headphones. Lightweight foam cushions . . . easily adjustable. 8' cord with phono plug.

MODEL ADP-135, 2 lbs. **$15.95**

ADP-135 SPECIFICATIONS: Driver Element: Dynamic. **Sensitivity:** 100 db/mv. **Frequency Response:** 10-15,000 cps. **Impedance:** Designed to operate from 3-16 ohm output sources. **Distortion:** At Normal Listening Levels, less than 1%. **Cord Length:** 8 ft. 4-wire with 3-circuit phono plug.

B Telex ST-11 Stereo Headset

Relax and enjoy your favorite music anywhere in the room without destroying the "true" stereo effect! Soft, pliable foam rubber muffs shut out "unwanted" outside noise . . . help develop excellent bass response and wide frequency range! Comfortable, lightweight! Easy-to-clean stainless steel headband and yoke. Order yours now!

MODEL ADP-92, 2 lbs. **$23.92**

ADP-92 SPECIFICATIONS—Driver element: Dynamic. **Sensitivity:** better than 95 db. **Frequency response:** 16 to 15,000 cps. **Impedance:** 8 ohms for use with 3 to 16 ohm sources. **Power input:** 15 milliwatts, 1 watt maximum. **Cord:** 4-wire 12 ft. long with spade terminals. **Color:** Tan & Brown.

C Stereo Headphone Control Box!

Simply switch from speaker to headphone listening *without* leaving your favorite chair! Connects to any amplifier regardless of power, & has standard jacks to accommodate *any impedance* stereo headset! Allows separate control of 2 headsets, plus individual adjustment for each ear! Includes 15' of cable & assembles easily in 1½ hours! Compact . . . 3" W x 6" D x 3¼" H . . . fits anywhere! Order yours now!

Kit AC-13, 3 lbs. **$9.95**

Save 5% On Your Heathkit Stereo/Hi-Fi System—Order Any Program Source, Amplifier, And Speaker; Deduct 5% On Order Blank.

HEATHKIT®

Heathkit "Single-Bander" SSB Transceivers . . .
Choose 80, 40, or 20 Meter Models

• True transceivers for 80, 40, or 20 meter SSB operation • LSB on 80 & 40 meters, USB on 20 meters • 200 watts P.E.P. input—Two 6GE5 RF amplifiers • Excellent exciter for operation with the KW Kompact • Crystal filter type SSB generation • ALC, AVC, and S-meter • Built-in VOX & push-to-talk circuitry • Stable low frequency VFO • 2 kc dial divisions—6" bandspread—vernier tuning

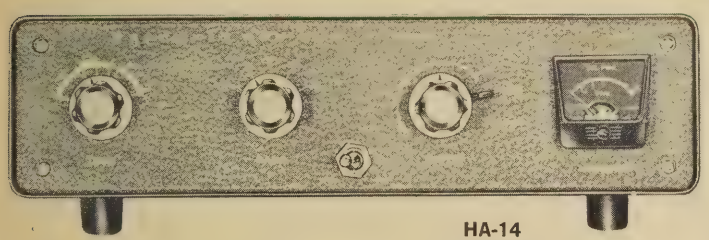
For The Ham On The Move . . . Or For The Economy Minded . . . Here are filter type SSB transcievers which operate either fixed or mobile!

Kit HW-12: 80-meter, 15 lbs. . . No money down, $11 mo. **$119.95**
Kit HW-22: 40-meter, 15 lbs. . . No money down, $11 mo. **$119.95**
Kit HW-32: 20-meter, 15 lbs. . . No money down, $11 mo. **$119.95**
GH-12, Push-to-talk and VOX microphone. . . 2 lbs. **$6.95**
Kit HRA-10-1, Plug-in 100 kc crystal calibrator. . . 1 lb. **$8.95**
Kit HP-13, DC Power Supply (Mobile) 7 lbs. . . no money dn., $6 mo. **$59.95**
Kit HP-23, AC Power Supply (Fixed station), 19 lbs. . . no money dn., $5 mo. **$39.95**
Kit HS-24, Mobile Speaker, 4 lbs. **$7.00**

SPECIFICATIONS—RF input: 200 watts PEP. **Sideband generation:** Crystal lattice band-pass filter method. **Stability:** 200 cps per hour after warm-up. **Carrier & unwanted sideband suppression:** 45 db. **Frequency coverage:** HW-12, 3.8—4.0 mc; HW-22, 7.2—7.3 mc; HW-32, 14.2—14.35 mc. **Receiver sensitivity:** 1 uv for 15 db (S+N)/N ratio. **Receiver selectivity:** 2.7 kc @ 6 db, 6.0 kc @ 50 db. **Output:** 50 ohm fixed (unbalanced). **Operation:** HW-12 & HW-22, LSB; HW-32, USB. **Audio output:** 1 watt @ 8 ohms. **Mike input:** Hi-Z. **Panel controls:** Frequency, final tune, function (OFF-PTT-VOX-TUNE), RF gain, AF gain (pull for crystal calibrator), VOX gain, meter. Front panel screw-driver adjust for S-meter and VOX delay. **Rear panel controls:** Mike gain, tune level, final bias. **Tube complement:** Fourteen tube heterodyne circuit; (3) 6EA8's mic. amp., VOX relay amp., IF amp, RF amp., Recvr. mixer; (5) 6AU6's, VFO, VOX amp., IF amps., Xmtr. mixer; (1) 6BE6, VFO isolator (HW-12), Het. osc. and mixer (HW-22 & HW-32); (1) 12BY7 Driver; (1) 12AT7 Xtal. osc., product det.; (1) 6EB8 Audio amp. and output; (2) 6GE5 RF output. **Power requirements:** 800 VDC @ 250 MA peak, 250 VDC @ 100 MA,—130 VDC @ 5 MA, 12 VAC or VDC @ 3.75 amperes. **Cabinet dimensions:** 6¼'' Hx12¼'' Wx10'' D.



HW-12
$119.95



HA-14
$99.95

Heathkit "KW Kompact" . . . A New Dimension In Amateur Radio . . . 1000 Watts x 1 Foot Wide x $99.95

• 1000 watts P.E.P. • Tunes 80 through 10 meters • ALC output to exciter • Built-in antenna change-over relay • Built-in SWR meter aids antenna adjustments on the road & monitors for maximum efficiency • Pretuned broad-band input circuit requires no tuning • Engineered with a pair of rugged tubes ideally suited to mobile operation (572-B's or T-160-L's) • Full provision for control of "remotely" located AC or DC power supply

The World's Smallest Kilowatt SSB Linear Amplifier . . . gives mobile signals added strength for reliable communication. With the appropriate power supply, the "KW Kompact" operates fixed or mobile. It can be driven by most SSB transmitters in the 100 watt output range. Go "KW Kompact" with a "Single-Bander" or SB-100 and get top performance . . . fixed or mobile.

Kit HA-14, 10 lbs. . . No money down, $10 mo. **$99.95**
Kit HP-14, D.C. Power Supply, 10 lbs., no money dn., $9 mo. **$89.95**
Kit HP-24, A.C. Power Supply, 22 lbs., no money dn., $5 mo **$49.95**

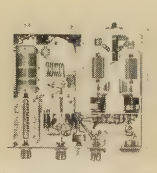
HA-14 SPECIFICATIONS—Band coverage: 80, 40, 20, 15, and 10 meters. **Maximum power input:** SSB, 1000 watts P.E.P. **Driving power required:** 100 watts P.E.P. **Duty cycle:** 50% (SSB voice modulation). **Third order distortion:**—30 db or better at 1000 watts P.E.P. **Output impedance:** Fixed 52 ohms unbalanced. SWR not to exceed 2:1. **Input impedance:** 52 ohms unbalanced; broad-band pretuned input circuit. **Meter functions:** 0-6 relative power & 1:1 to 3:1 SWR. **Front panel controls:** Tuning, band switch, relative power sensitivity control, meter switch (FWD & SWR), power switch (off, on). **Tube complement:** Two 572-B (or two T160-L) in parallel. **Power requirements:** 2000 VDC at 500 ma SSB peak, —110 VDC at 60 ma, and 12.6 V. AC or DC at 4 amperes. **Cabinet Size:** 12-3/16'' W x 3-3/16'' H x 10'' D.



Picture a "KW Kompact" on your operating desk. Handsome design, small size. Ideal for portable operation, too!



A kilowatt in a car? Stack your KW Kompact with your transceiver . . . in most cars there's room to spare.



Inside, a neat layout that makes assembly easy . . . quality components for dependable operation.

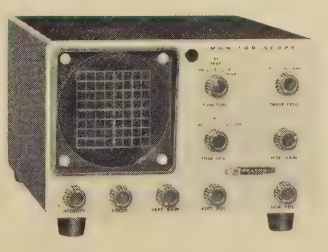


HO-13
$82.95

Heathkit "Ham-Scan" Spectrum Monitor

"Ham-Scan" Visually Shows All Signals Within Your Receiver Bandpass And Up To 50 KC Above And Below The Frequency To Which You Are Tuned . . . adds sight to sound for signal reports. Operates with IF's of 455, 1600, 1650, 1681, 2075, 2215, 2445, 3000, 3055, 3395 kc. Identifies emission types . . . pinpoints spurious signals.

Kit HO-13, 13 lbs., . . .
no money dn., $9 mo. **$82.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.



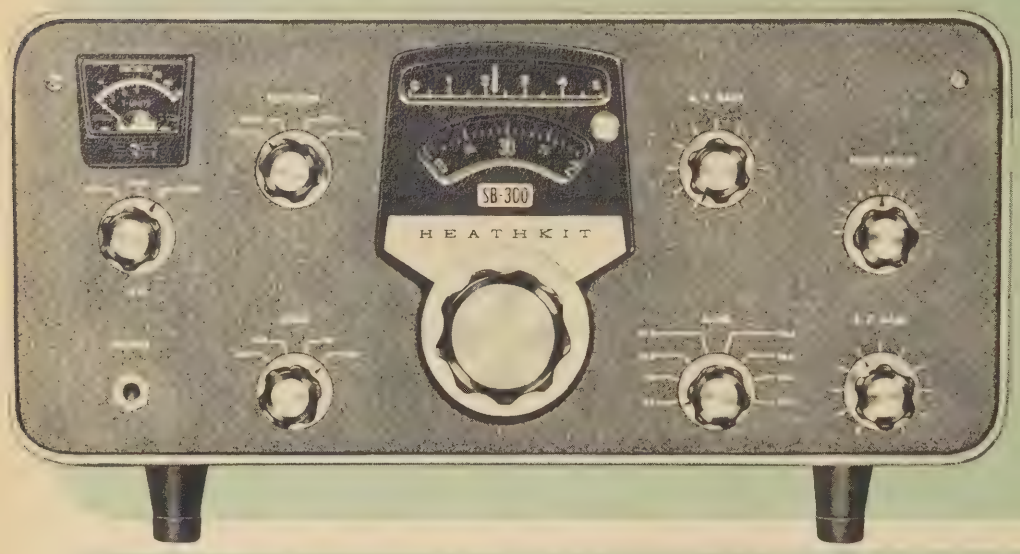
HO-10
$64.95

HO-10 Signal Monitor

Here's The Most Widely Chosen Amateur Scope On The Market . . . Displays envelope, AF & RF trapezoid patterns, handling power outputs from 5 watts to 1 kilowatt. Simple to connect, yet the HO-10 provides the true, accurate picture of your transmitted envelope . . . positively spots overmodulation.

Kit HO-10, 13 lbs.
no money dn., $7 mo. **$64.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Heathkit® Deluxe SB-Series Sets The Pace



SB-300

$250.00

See The New SB-600 Matching Speaker On Page 34

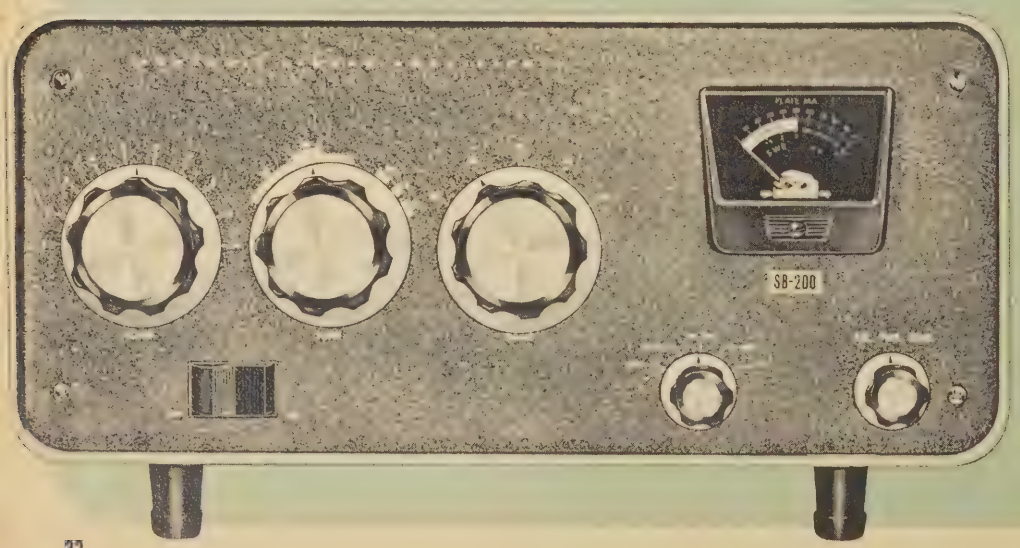
• A New standard of amateur performance & value • Complete coverage of 80 through 10 meter amateur bands with all crystals furnished, plus provision for VHF converters • Crystal-controlled front-end for same rate tuning on all bands • 1 kc dial calibrations—100 kc per dial revolution • Bandspread equal to 10 feet per megacycle • Tuning dial to knob ratio approx. 1-to-4 • Provision for Transceive operation with matching SB-400 Transmitter • Prebuilt Linear Master Oscillator (LMO), wiring harness and two heavy-duty circuit boards for fast, easy assembly • Professional styling & features at 60% savings



SB-400

$325.00

• Built-in power supply • Complete transceive capability with SB-300 Receiver • Linear master oscillator frequency control • Built-in antenna change-over relay • All crystals supplied for complete 80-10 meter coverage • Automatic level control for higher talk power, minimum distortion • 180 watts PEP SSB, 170 watts CW • Crystal filter type SSB generation • Operates SSB (upper or lower sideband) & CW • VOX & PTT control in SSB operation, VOX operated CW break-in using CW sidetone • CW "shift" transceive operation to eliminate transceiver chasing • Crystal controlled heterodyne oscillators • 1 kc dial calibration—100 kc per dial revolution • Dial bandspread equal to 10 feet per megacycle • 500 kc coverage per bandswitch position • Switched 120 V AC for external amplifier antenna relay



SB-200

$200.00

• 1200 watts P.E.P. input SSB—1000 watts CW • 80 through 10 meter band coverage • Built-in SWR meter—Antenna relay—Solid-state power supply • Automatic Level Control (ALC) • Shielded, fan-cooled amplifier compartment • Pre-tuned cathode input circuit for maximum efficiency & low distortion • Circuit-breaker power supply protection—no fuses • Designed for 120/240 volt operation

For Value & Performance

HEATHKIT

Heathkit SB-300 Amateur Receiver

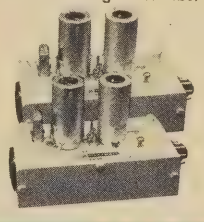
Your Best Buy In An Amateur Radio Receiver! The Heathkit SB-300, the first in this deluxe series of SSB equipment, has set the standards for value & performance in amateur-band receivers. A high-performance, five-band, 80-10 meter receiver with built-in power supplies, optional 6 and 2 meter converters, and tuning for AM, CW, and SSB . . . the SB-300, at a fraction of the cost of others, is a receiver that outperforms them all! To believe it, check out the reviews in the magazines . . . or better yet, get on the air, and talk to a ham who owns one.

Stable, Accurate, Versatile. Drift less than 100 cps *per hour* after warm up . . . less than 100 cps with a 10% line voltage variation! A linear master oscillator with 1 kc dial calibrations that is electrically accurate to within *400 cps* on all bands and visually accurate within 200 cps! And there's a built-in crystal calibrator and a no-backlash vernier dial drive to help. Nothing's been left out in this design . . . a sealed 2.1 kc crystal bandpass filter; optional AM and CW crystal filters; provision for optional VHF converters; provision for transceive mode with the SB-400 below . . . everything you need to put it to work in your shack and in exactly the way you've been wanting a receiver to work.

Order Your SB-300 Now! This is the one you've been waiting for . . . a deluxe, professional receiver with a realistic price tag . . . know the enjoyment of operating with the best . . . with your own SB-300!

Kit SB-300, less speaker, 23 lbs., no money dn., $23 mo. **$250.00**
SBA-300-1 Optional AM crystal filter (3.75 kc), 1 lb. **$19.95**
SBA-300-2 Optional CW crystal filter (400 cps), 1 lb. **$19.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

SB-300 SPECIFICATIONS—Frequency range (megacycles): 3.5 to 4.0, 7.0 to 7.5, 14.0 to 14.5, 21.0 to 21.5, 28.0 to 28.5, 28.5 to 29.0, 29.0, to 29.5, 29.5 to 30. **Intermediate frequency:** 3.395 megacycles. **Frequency stability:** Less than 100 cps per hour after 20 min. warmup under normal ambient conditions. Less than 100 cps for ±10% line voltage variation. **Visual dial accuracy.** Within 200 cps on all bands. **Electric dial accuracy:** Within 400 cps on all bands after calibration at nearest 100 kc point. **Backlash:** No more than 50 cps. **Sensitivity:** Less than 1 microvolt for 15 db signal plus noise-to-noise ratio for SSB operation. **Modes of operation:** Switch selected; LSB, USB, CW, AM. **Selectivity:** SSB: 2.1 kc at 6 db down, 5.0 kc at 60 db down (crystal filter supplied). AM: 3.75 kc at 6 db down, 10 kc at 60 db down (crystal filter available as accessory). CW: 400 cps at 6 db down, 2.5 kc at 60 db down (crystal filter available as accessory). **Spurious response:** Image and IF rejection better than 50 db. Internal spurious signals below equivalent antenna input of 1 microvolt. **Audio response:** SSB: 350 to 2450 cps nominal at 6 db. AM: 200 to 3500 cps nominal at 6 db. CW: 800 to 1200 cps nominal at 6 db. **Audio output impedance:** Unbalanced nominal 8 ohm speaker and high impedance headphone. **Audio output power:** 1 watt with less than 8% distortion. **Antenna input impedance:** 50 ohms nominal. **Muting:** Open external ground at Mute socket. **Crystal calibrator:** 100 kc crystal. **Front panel controls:** Main tuning dial; function switch; mode switch: AGC switch; band switch; AF gain control; RF gain control; preselector; phone jack. **Rear apron conections:** Accessory power plug; HF antenna; VHF #1 antenna; VHF #2 antenna; mute; spare; anti-trip; 500 ohm; 8 ohm speaker; line cord socket; heterodyne oscillator output; LMO output; BFO output; VHF converter switch. **Tube complement:** (1) 6BZ6 RF amplifier; (1) 6AU6 Heterodyne mixer; (1) 6AB4 Heterodyne oscillator; (1) 6AU6 LM osc.; (1) 6AU6 LMO mixer; (2) 6BA6 IF amplifier; (1) 6AU6 Crystal calibrator; (1) 6HF8 1st audio, audio output; (1) 6AS11 Product Detector, BFO, BFO Amplifier. **Power supply:** Transformer operated with silicon diode rectifiers. **Power requirements:** 120 volts AC, 50/60 cps, 50 watts. **Dimensions:** 14⅞" W x 6⅝" H x 13⅜" D. **Net weight:** 17 lbs.



Plug-in VHF Converters For SB-300

6 meter model extends coverage from 48-54 mc (50-52 mc crystal supplied). 2 meter model extends coverage from 142-150 mc (144-146 mc crystal supplied). Designed to plug-in to SB-300, but work with any receiver having proper voltages and 10 meter coverage.

SBA-300-3 (6 meter), 2 lbs. **$19.95**
SBA-300-4 (2 meter), 2 lbs. **$19.95**

Heathkit SB-400 Transmitter

Incomparable In Value, Performance, & Design! The Heathkit SB-400 brings you the finest SSB Transmitter at tremendous dollar savings. The unique design features of the SB-400 include the use of compactron tubes for space-saving component layout, and heavy-duty circuit board construction plus a precut wiring harness for fast assembly, stable operating characteristics, and years of trouble-free performance. The SB-400 is the ideal "mate" for the SB-300, and offers complete transceive capability. It is your best value in SSB transmitters, bar none!

Check These Quality Features. Unique mechanical design combined with a prebuilt Linear Master Oscillator (LMO) for smooth, effortless tuning . . . 1 kc dial calibrations for precise frequency settings . . . 100 kc per dial revolution for bandspread equal to 10 feet per megacycle . . . a zero-set knob for precise calibration to a secondary standard . . . complete shielding and isolation of circuits for high stability and maximum TVI protection . . . built-in heavy-duty power supply (a feature not found in more expensive comparable transmitters) . . . and many more extras.

Beautiful Styling—Sturdy Construction. Neat, modern low-profile cabinet is attractively finished in light gray-green and fully perforated for good ventilation. Cabinet top is hinged for easy access to all inside-top components. Front panel features green "textured" finish with dark green molded dial escutcheon and knobs with spun aluminum inserts. Heavy-gauge aluminum chassis construction provides extra strength without excessive weight.

Easy To Build Too! Factory built LMO and crystal filter; just two easy circuit boards and the help of three wiring harnesses.

Order Your SB-400 Now! It belongs in your ham shack.

Kit SB-400, 34 lbs., $33 dn., $28 mo. **$325.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
HDP-21 (SSB "Ham" Mike, see pg. 35), 4 lbs., no money dn., $5 mo. **$29.40**

SB-400 SPECIFICATIONS—Emission: SSB (upper or lower sideband) and CW. **Power input:** 170 watts CW, 180 watts P.E.P. SSB. **Power output:** 100 watts (80-15 meters), 80 watts (10 meters). **Output impedance:** 50 to 75 ohm—less than 2:1 SWR. **Frequency range:** (mc) 3.5—4.0; 7.0—7.5; 14.0—14.5; 21.0—21.5; 28.0—28.5; 28.5—29.0; 29.0—29.5; 29.5—30.0. **Frequency stability:** Less than 100 cps per hr. after 20 min. warmup. **Carrier suppression:** 55 db below peak output. **Unwanted sideband suppression:** 55 db @ 1 kc. **Intermodulation distortion:** 30 db below peak output (two-tone test). **Keying characteristics:** Break-in CW provided by operating VOX from a keyed tone (Grid block keying). **CW sidetone:** 1000 cps. **ALC characteristics:** 10 db or greater @ 0.2 ma final grid current. **Noise level:** 40 db below rated carrier. **Visual dial accuracy:** Within 200 cps (all bands). **Electrical dial accuracy:** Within 400 cps after calibration at nearest 100 kc point (all bands). **Backlash:** Less than 50 cps. **Oscillator feed-through mixer products:** 55 db below rated output (except 3910 kc crossover which is 45 db). **Harmonic radiation:** 35 db below rated output. **Audio input:** High impedance microphone or phone patch. **Audio frequency response:** 350 to 2450 cps ±3 db. **Power requirements:** 80 watts STBY, 260 watts key down @ 120 V AC line. **Dimensions:** 14⅞" W x 6⅝" H x 13⅜" D.

Heathkit SB-200 Kilowatt Linear Amplifier

A Husky Fixed-Station Kilowatt Linear . . . Complete With Built-In Power Supply . . . Only $200.00! Here's a compact, self-contained final amplifier that provides 1200 watts P.E.P. input SSB, and 1000 watts CW, and matches the clean, uncluttered styling of the SB-300 & SB-400.

Completely Versatile. A high efficiency grounded-grid amplifier, the SB-200 can be driven by most popular SSB & CW exciters in the 150-200 watt power range. Can be operated from 120 or 240 VAC, feeds into the popular 52 ohm (or 75 ohm) unbalanced transmission line.

Loaded With Features. Such as the pre-tuned cathode input circuit for maximum efficiency and low distortion . . . Automatic Level Control output for automatic exciter control . . . two heavy-duty 572B/T-160L final amplifier tubes, fan-cooled for maximum life . . . complete shielding for TVI protection and stability . . . separate pi-network output coils for 80-20 & 15-10 . . . conservatively rated solid-state power supply for long life and dependability . . . circuit breaker protection . . . built-in antenna relay for operating convenience (antenna is automatically switched to exciter when linear is turned off) . . . built-in panel meter that measures SWR, Relative Power, plate current, grid current, and high voltage . . . sturdy, but lightweight, one piece aluminum chassis that is partitioned for extra strength and isolation (the whole thing only weighs 35 lbs.).

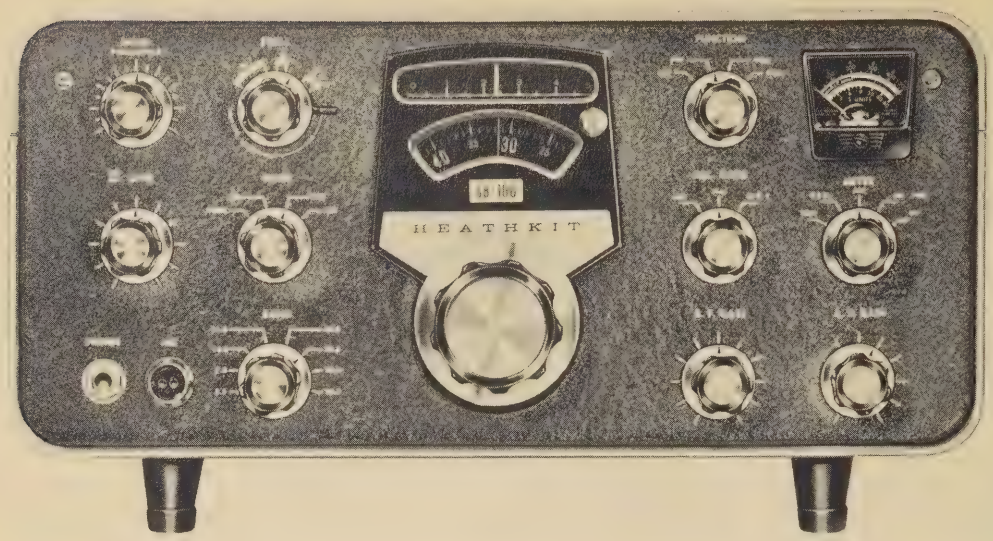
Easy To Build. Wide open layout plus a heavy duty circuit board for the power supply.

Now Is The Time! If you've been yearning for a full gallon, put this one on your desk top. For here is high quality, high power SSB at the price you've been waiting for . . . six watts per dollar! Order your SB-200 today!

Kit SB-200, 41 lbs., no money., $19 mo. **$200.00**

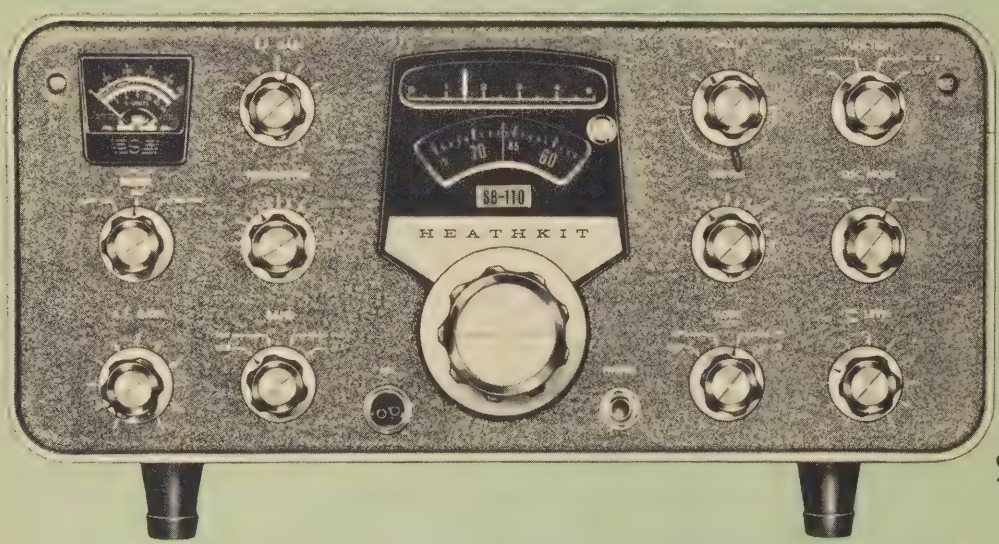
SB-200 SPECIFICATIONS—Band coverage: 80, 40, 20, 15 & 10 meters. **Maximum power input:** 1200 watts P.E.P. SSB, 1000 watts CW. **Driving power required:** 100 watts. **Duty cycle:** SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). **Third order distortion:** 30 db or better at 1000 watts P.E.P. **Output impedance:** 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. **Input impedance:** 52 ohm unbalanced; broad-band pretuned input circuit requires no tuning. **Meter functions:** 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. **Front panel controls:** Load; Tune; Band; Relative Power Sensitivity; Meter Switch. Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. **Tube complement:** Two 572B/T-160-L (in parallel). **Power requirements:** 120 volts AC @ 16 amperes (max.), 240 volts AC @ 8 amperes (max.). **Cabinet size:** 14⅞" W x 6⅝" H x 13⅜" D. **Net weight:** 35 lbs.

The World's Most Advanced SSB



• 180 watts input P.E.P. SSB—170 watts input CW on five bands, 80-10 meters • Switch selection of Upper or Lower sideband or CW • Built-in CW sidetone • Operates PTT or VOX • Transceiver tuning with Heath SB-Series LMO (Linear Master Oscillator; features 1KC dial calibration) or xtal-control transmit with VFO receive or crystal-control transceive • Separate offset CW carrier crystal • Triple Action Level Control™ • Built-in 100 kc crystal calibrator • Quiet, enclosed relays • Fixed or mobile operation with appropriate power supply • Fast assembly with circuit boards and wiring harnesses • Simple alignment—requires only a VTVM or VOM, a dummy load and a broadcast receiver

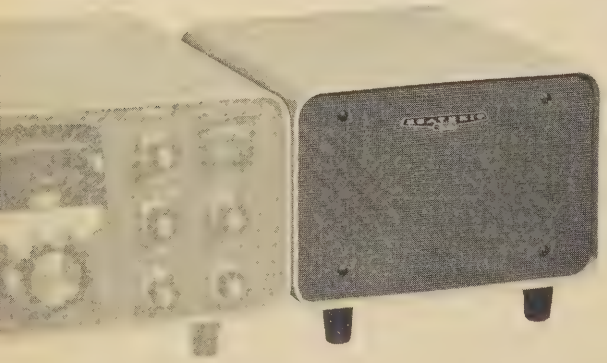
SB-100
$360.00



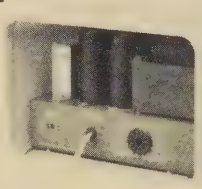
• Features the Heath SB-Series LMO (Linear Master Oscillator) for high stability, linear tuning, and 1 kc dial calibration • Full SSB-CW transceive operation on six meters • 180 watts input PEP SSB—150 watts CW • Switch select for Upper Sideband/Lower Sideband/CW operation • Separate offset CW carrier crystal for clear, pure, CW note • ALC & ANL • Built-in 100 kc calibrator & antenna switching • Covers 50-52 mc with crystals supplied — total coverage 49.5-54 mc • Crystal filter SSB generator • Fixed station or mobile operation with the Heathkit HP-23 or HP-13 power supplies and SBA-100-1 mobile mount

SB-110
$320.00

NEW! Heathkit Communications Speaker—Matches SB-Series Gear!



SB-600 Available Late April
$17.95

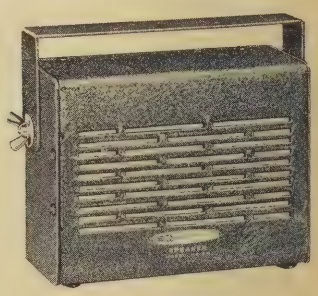


Room inside for SSB Power supply (HP-23).

Now You Can Have A Truly Professional Looking SB-Series Fixed Station . . . by completing your rig with this matching speaker. Plus, the SB-600 enclosure includes space for mounting the HP-23 AC Power Supply for the SB-100 or SB-110. Engineered to provide the best audio from any make equipment. The 8 ohm, 6″ x 9″ speaker features 300 to 3,000 cps response for maximum SSB readability. Cabinet dimensions: 10″ W x 6½″ H x 10½″ D.
SB-600, 5 lbs. **$17.95**

Heathkit Mobile Speaker Kit

HS-24
$7.00



Here's The Ideal Speaker For Use With All Heathkit Mobile Installations! This weatherproof 8 ohm, 4″ x 6″ oval speaker and rugged steel cabinet combination is especially designed for maximum communications intelligibility. Mounts most anywhere. Measures 6$\frac{7}{32}$″ W x 4¾″ H x 2½″ D. Complete with gimbal mounting bracket.
Kit HS-24, 4 lbs. **$7.00**

Amateur Band Transceivers

HEATHKIT®

The Heathkit SB-100 80 Through 10 Meter SSB Transceiver

SB-100 Features Engineering Unequaled In The Industry! . . . It includes all of the high-performance innovations you've read, heard, talked about, or experienced on the already famous SB-Series equipment. A 6 pole crystal lattice filter, producing a superior 2 to 1 shape factor and symmetrical pass band . . . TALC and Switch-board construction . . . the versatility of 180 watt P.E.P. input power . . . fixed or mobile power supplies . . . and many more Heath-engineered features make this the most up-to-date amateur band SSB transceiver on the market today.

Heathkit Switch-Board™ Technique Produces Better Than Factory Assembled Results! . . . virtually eliminates point-to-point wiring of tuning circuitry. The removable switch shaft makes the assembly of Switch-Boards easy . . . makes tuning coils readily accessible.

TALC™ (Triple Action Level Control) Sets New Standards For Automatic Level Control. Three separate circuits are combined in TALC to provide greater speech compression . . . allow for even more variation in speech level . . . and boost the performance of the SB-100 still higher.

Order The SB-100 For The Best Value In SSB Transceivers . . . Regardless! We invite comparison of the SB-100 specs with those of any other make of SSB transceiver. (Write to Heath for complete specs with schematic.) You will agree that the SB-100 is the best investment you can make in amateur radio equipment. (Recommended for hams with previous electronic or kit building experience.)

Kit SB-100, 23 lbs., $36 dn., $31 mo. **$360.00**
SBA-100-1, Mobile Mounting Kit, 6 lbs. **$14.95**
Kit HP-13, DC Power Supply, 7 lbs.
no money dn., $6 mo. **$59.95**
Kit HP-23, AC Power Supply, 19 lbs.
no money dn., $5 mo. **$39.95**

PARTIAL SB-100 SPECIFICATIONS—Receiver section: Sensitivity: Less than 1 microvolt for 15 db signal-plus-noise to noise ratio for SSB operation. **SSB selectivity:** 2.1 kc minimum at 6 db down, 5 kc maximum at 60 db down—2:1 nominal shape factor—6:60 db. **Power output:** 2 watts. **Spurious response:** Image and IF rejection better than 50 db. Internal spurious signals below equivalent antenna input of 1 microvolt. **Transmitter section: DC power input: SSB:** 180 watts P.E.P. continuous voice. **CW:** 170 watts—50% duty cycle. **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm nonreactive load). **Output impedance:** 50 ohms to 75 ohms. **Oscillator feedthrough or mixer products:** 55 db below rated output. **Harmonic radiation:** 35 db below rated output. **Carrier suppression:** 50 db down from single-tone output. **Unwanted sideband suppression:** 55 db down from single-tone output at 1000 cps reference. **Third order distortion:** 30 db down from two-tone output. **Noise level:** At least 40 db below single-tone carrier. **General: Frequency coverage:** 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megacycles). **Frequency stability:** Less than 100 cps per hour after 20 minutes warmup from normal ambient conditions. Less than 100 cps for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial accuracy—"Resettability":** Within 200 cps on all bands. **Electrical dial accuracy:** Within 400 cps after calibration at nearest 100 kc point. **Dial mechanism backlash:** Less than 50 cps. **Calibration:** 100 kc crystal. **Audio frequency response:** 350 to 2450 cps. **Power requirements:** 700 to 800 volts at 250 ma; 300 volts at 150 ma; —110 volts at 10 ma; 12 volts at 4.76 amps. **Cabinet dimensions:** 14⅞" W x 6⅝" H x 13⅜" D.

The Heathkit SB-110 6-Meter Transceiver

SB-110 Puts The Famous Heathkit SB-Series On 6 Meters. Now you can work six with a truly high-performance rig. Here's a 180-watt P.E.P. input SSB rig with "DC Band" stability, plus PTT or VOX control, single knob tuning, switch selected modes for either crystal controlled transceiver or crystal controlled transmit, variable receive operation and works CW or cross-mode for added versatility.

A Truly Great Heritage! The SB-110 provides full 6 meter transceiver operation with the same selectivity, stability, calibration, performance, and value already made famous by the Heathkit SB Series equipment for operation on 80-10 meters. Enjoy operating features that cannot be found in any other comparable transceiver on the market today! Discover the satisfaction of having a 6 meter signal with the real punch of SSB . . . of completing "solid copy" QSO's when band openings are minimal . . . of extending ground wave coverage . . . of owning and operating a high performance 6 meter rig you have assembled yourself.

Kit SB-110, 23 lbs. . . $32 dn., $27 mo. **$320.00**
Kit HP-13, DC Power Supply, 7 lbs. . . . no money dn., $6 mo. **$59.95**
Kit HP-23, AC Power Supply, 19 lbs. . . . no money dn., $5 mo. **$39.95**
Kit SBA-100-1, Mobile Mounting Kit, 6 lbs. **$14.95**

PARTIAL SB-110 SPECIFICATIONS—RECEIVER SECTION: Sensitivity: 0.1 uv for 10 db signal-plus-noise to noise ratio. **Selectivity:** 2.1 kc @ 6 db down, 5 kc max. @ 60 db down. **Image rejection:** 50 db or better. **IF rejection:** 50 db or better. **Audio output power:** 1 watt. **AGC characteristics:** Audio output level varies less than 12 db for 50 db change of input signal level (0.5 uv to 150 uv). **TRANSMITTER SECTION: DC power input:** SSB, 180 watts PEP; CW, 150 watts. **RF power output:** SSB, 100 watts PEP. CW, 90 watts (50 ohm non-reactive load). **Output impedance:** 50 ohm nominal with not more than 2:1 SWR. **Carrier suppression:** 55 db down from rated output. **Unwanted sideband suppression:** 55 db down from rated output @ 1000 cps & higher. **Distortion products:** 30 db down from rated PEP output. **Hum & noise:** 40 db or better below rated carrier. **Keying characteristics:** VOX operated from keyed tone using grid-block keying. **GENERAL: Frequency coverage:** 49.5 to 54.0 mc in 500 kc segments (50.0 to 52.0 mc with crystals supplied). **Frequency selection:** Built-in LMO or crystal control. **Frequency stability:** Less than 100 cps drift per hour after 20 minutes warmup under normal ambient conditions. Less than 100 cps drift for ±10% supply voltage variations. **Dial Accuracy:** Electrical, within 400 cps on all band segments, after calibration at nearest 100 kc point. Visual, within 200 cps. **Dial backlash:** No more than 50 cps. **Calibration:** Every 100 kc. **Power requirements:** High voltage, +700 v. DC @ 250 ma with 1% max. ripple. Low voltage, +250 v. DC @ 100 ma with .05% max. ripple. Bias voltage, —115 v. DC @ 10 ma with .5% max. ripple. Filament voltage, 12.6 v. AC/DC @ 4.355 amps. **Dimensions:** 14⅞" W x 6⅝" H x 13⅜" D.

Ⓐ Special SSB "Ham" Microphone

The Perfect Mike For Use With The SB-100, SB-110, or SB-400. Special response, 300 to 3,000 cps, favors voice frequencies for clear, sharp SSB communications. Mike stand has grip-to-talk switch with lock position. Hi-Z output. Rugged die-cast zinc case. Complete with wiring diagrams for use with any rig. Cables included.
HDP-21, 4 lbs. . . No money down, $5 mo. **$29.40**

Ⓑ Push-To-Talk Mobile Microphone

Here's A Longtime Favorite Mobile Mike! The GH-12 features a ceramic element with shaped response for voice frequencies—excellent for either AM or SSB communications. It's also ideally suited to the rugged work-out given to mobile equipment—stands up well even under the temperature extremes that sometimes occur in parked cars. Complete with cable, less connector.
Model GH-12, 2 lbs. **$6.95**

Ⓒ Universal Mobile Mounting Bracket For SB-100 & SB-110

Go Mobile With The SB-100 or SB-110! The SBA-100-1 permits easy installation of either transceiver on the transmission hump or under the dash. Heath-Engineered cantilever suspension provides firm support . . . allows quick plug-in of either transceiver (not interchangeable) in your car for quick transfer from fixed to mobile operation.
Kit SBA-100-1, 6 lbs. **$14.95**



World's Largest



Heathkit Solid-State Electronic Keyer

• Dependable solid-state circuitry • Speed range—15 to 60 words per min. Slow-speed option—10 to 20 wpm • Self-completing dashes • Solid-state switching—no relays to stick or chatter—no contact bounce to punch holes in characters • Built-in paddle—"feel" is adjustable to your fist during assembly • Adaptable to either right or left handed operators • Engineered to convert easily to semi-automatic operation if desired • Variable dot-space ratio • Hold switch for transmitter tuning • Built-in side-tone • Built-in transformer-operated power supply isolates the keyer from the power line • Fused for protection

Kit HD-10, 6 lbs., no money dn., $5 mo. **$39.95**

HD-10 SPECIFICATIONS—Keying: Speed range—15 to 60 wpm. Slow speed option—10 to 20 wpm. **Keying output:** Keyed line to chassis ground. **Voltage polarity:** Negative to ground only. **Maximum open circuit or spike voltage:** 105 volts. **Key-closed voltage:** 0.2 volts, max. **Key-closed current:** 35 milliamperes, max. **General: Audio:** Internal speaker or high impedance headphone jack. **Transistor complement:** (7) 2N407 PNP; (3) 2N2712 NPN; (1) 2N398A PNP. **Controls:** Off-Operate-Hold switch; Speed control; Dot-To-Space ratio control. **Rear panel connections:** Keyed line; receiver audio; battery +45 volts; battery +22½ volts. External key options: hand key, dash arm, dash, dot. **Power requirements:** AC operation, 105-125 V. AC, 50-60 cps. Battery operation, 45 volts with 22½ V. tap; 14 millamperes. **Dimensions:** 3¾" W x 4¼" H x 10½" D.



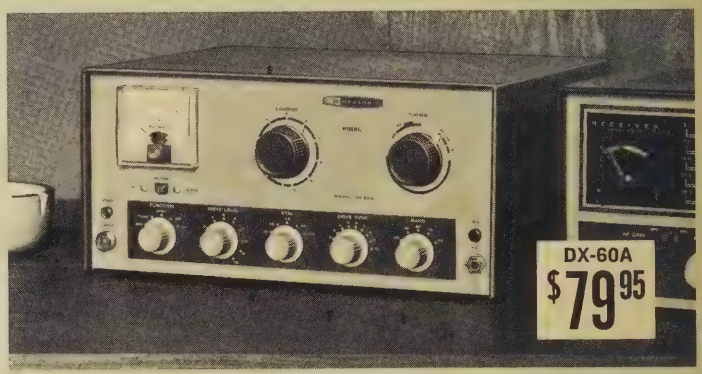
Heathkit HR-10 Amateur Band Receiver
An Excellent Performer For The Beginning Ham

• Amateur band coverage only for maximum stability & accuracy • Tunes SSB, AM, & CW on 80-10 meter bands • Lattice-type crystal filter for high selectivity • 100 kc crystal calibrator plugs in inside receiver enclosure • Superheterodyne with RF stage for extra sensitivity • Prebuilt, prealigned tuning unit for fast, simple assembly

A Fine Receiver Any Amateur Would Be Proud To Own! HR-10 includes an "S" meter, separate RF and AF gain controls, an accessory power socket, and BFO tuning. It has the solid stability you need for listening to SSB or working CW . . . the sensitivity you need to pull weak signals out of the "mud." The HR-10 will prove itself a real performer, whatever your test for receiver quality.

Kit HR-10, 20 lbs., no money dn., $8 mo. **$75.00**
Kit HRA-10-1, Plug-in 100 kc crystal calibrator, 1 lb. **$8.95**
Kit HS-24, Speaker, 4 lbs. (See page 34 for details). **$7.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

HR-10 SPECIFICATIONS—Frequency coverage: 80 through 10 meters. **IF frequency:** 1681 kc. **Sensitivity:** 1 uv for 10 db signal-to-noise ratio. **Image rejection:** 40 db or better. **Selectivity:** 3 kc at 6 db, 9 kc at 40 db. **Input impedance:** 50 to 75 ohm, coaxial. **Audio output impedance:** 8 or 500 ohm. **Tube complement:** 6BZ6, (2) 6EA8, 6BA6, 6BJ7, 6EB8, 6X4. **Power requirements:** 117 volts AC, 50/60 cycles, 50 watts. **Dimensions:** 13¾" W x 11½" D x 6½" H.



Heathkit DX-60A Phone & CW Transmitter . . .
Mate To The HR-10

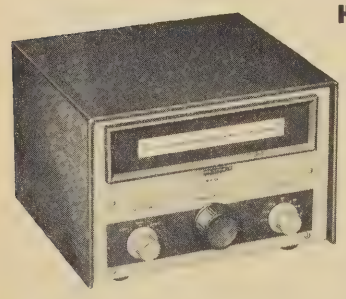
• 90 watts phone or CW—80 through 10 meters • Neutralized 6146 final amplifier • Built-in low pass filter • Grid block keying—easy access to crystal sockets • May be run at reduced power for novice operation • Transmitter mate of the HR-10

Novice Or Old-Timer, Choose The DX-60A! If you're a novice, the DX-60A is right for you. Operate it at the required 75-watt maximum (crystal control) for novice class CW . . . and later when you get your general class phone license, go to VFO control and use the DX-60A's full 90 watts of power. (See the HG-10 VFO below, an excellent VFO for the DX-60A). No transmitter in this price range will offer you more.

Check These Advanced Features . . . a low-pass filter suppresses harmonic interference, a neutralized final amplifier for high stability, excellent grid block keying, switch selection of four crystal positions or external VFO for full coverage of amateur bands, and single-knob bandswitching. Compare! . . . you'll choose the Heathkit DX-60A.

Kit DX-60A, 24 lbs. . . .(less crystals). . . no money dn., $8 mo. . . **$79.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

DX-60A SPECIFICATIONS—Power input: 90 watts peak; controlled carrier phone, or CW. **Output impedance:** 50-75 ohm (coaxial). **Output coupling:** Pi-network. **Operation:** CW or AM phone—crystal or VFO control. **Band coverage:** 80 through 10 meters. **Power Requirements:** 105-125 V., 50-60 cps, 225 watts. **Dimensions:** 13¾" W x 11½" D x 6½" H.



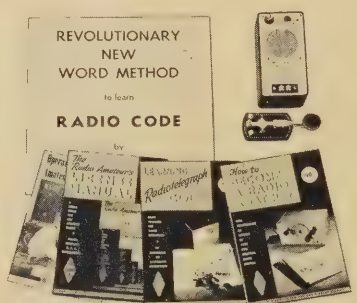
Heathkit VFO . . . For 80-2 Meters

HG-10
$34.95

• Perfect VFO for DX-60A transmitter • Will drive most other transmitters—provides 5 volts RMS output • Smooth vernier tuning has 28 to 1 ratio "Spot" switch for off-the-air tuning • Output 3.5 to 4 & 7 to 9 mc range

Now! . . . work VFO on all bands . . . enjoy the operating convenience of being able to QSY anywhere within the bands. Styled to match the DX-60A, the HG-10 will compliment any outfit. Rugged, stable design. Keys beautifully.

Kit HG-10, 12 lbs., no money dn., $5 mo. **$34.95**



Learn About Amateur Radio

Obtain Your FCC License Fast . . . Course includes 4 authentic American Radio Relay League handbooks: "How To Become A Radio Amateur"; "Radio Amateur's License Manual"; "Learning The Radio-Telegraph Code"; "Operating an Amateur Radio Station"; and code oscillator kit. **Plus** —3 records that teach code by revolutionary "word-method."

HDP-22, Amateur Radio Starter Group, 6 lbs., Save $3.00. . . . . **$15.95**
HDP-32, Code Records only, 2 lbs. **$9.50**
HDP-42, ARRL Books only (4), 2 lbs. **$2.00**
Kit CO-1, Oscillator plus Key only, 2 lbs. **$7.95**

Selection Of Amateur Radio Equipment

New! Heathkit HM-15 Reflected Power Meter



NEW LOW PRICE!
HM-15
$14.95

• Indicates forward or reflected power and SWR • Band coverage is 160 through 6 meters • Handles peak power of well over 1 kilowatt • Matches 50 or 75 ohm lines • Matches Heathkit SB-Series equipment • Easy to assemble

Heathkit Reflected Power Meter (SWR Meter) Shows Antenna/Transmission Line Match . . . enables you to design your antennas for maximum efficiency. HM-15 measures forward and reflected power for direct reading of percentage of forward and reflected power, and voltage-standing-wave-ratio (SWR) from 1:1 to over 3:1. Sensitivity control adjusts for full-scale readings at nominal transmitter output. Ideal for matching impedances between exciters and final amplifiers, or for designing multielement antennas.

Kit HM-15, 2 lbs. **$14.95**

HM-15 SPECIFICATIONS—Operation: Indicates percentage of forward and reflected power, and voltage standing wave ratio (SWR). **RF Power Handling Capability:** One kilowatt. **Input And Output Impedance:** 50 or 75 ohm. **Band Coverage:** 160 through 6 meters. **Meter:** 100 microamperes, full scale. **Dimensions:** 9¼" L x 3⅝" W x 2⅝" H.

New! Heathkit HD-15 Hybrid Phone Patch . . . More Features, Lower Price!



NEW LOW PRICE
HD-15
$24.95

• Features individual gain controls for receiver-to-line & line-to-transmitter audio level • VU meter to monitor audio levels • Operates with VOX or PTT • Convenient one-switch operation

Efficient Transfer Of Amateur Radio Communications To Telephone Lines With A Flip-Of-A-Switch . . . ideal for heavy SSB phone patch traffic. The HD-15 transfers audio to 600 ohm telephone lines with negligible hum or crosstalk. Operates with virtually all transmitters and receivers. Styled to match the new Heathkit SB series equipment. Use with 3 to 16 ohm speakers and Hi-Z or 600 ohm transmitter phone patch inputs.

The HD-15 Hybrid Phone Patch is a fun kit to build! . . . assembles in just one evening. It's the perfect complement to the well outfitted amateur station.

Kit HD-15, 3 lbs., no money dn., $5 mo. **$24.95**

HD-15 SPECIFICATIONS—Circuit: Telephone hybrid circuit. Allows voice control or manual operation. Single switch places unit in full operation. **Telephone Line Input Impedance:** Approximately 600 ohm. **Meter:** Standard VU meter for constant output monitoring and null depth indication. **Null Depth:** At least 30 db isolation between transmit and receive circuits. **Receiver Impedance:** Effective match from 3 to 16 ohm. **Transmitter Impedance:** 600 ohm or high impedance output. **Cabinet Size:** 9¼" L x 3⅝" W x 2⅝" H.



HW-29A
$44.95

Go VHF For Less Than $50.00 With Benton Harbor Lunch Boxes!

• Ideal for CAP, MARS, local net or emergency operations • Crystal controlled transmitter—5 watt input • HW-30 2-meter model capable of operation on new USCG Auxiliary frequency 143.28 mc.

Complete Transceivers . . . Include ceramic microphone, meter jack, and power cables for mobile operation. Use Heathkit GP-11 for mobile power. Crystals (not supplied) are in 8 mc range.

Kit HW-29A (6 meter), 9 lbs., no money dn., $5 mo. **$44.95**
Kit HW-30 (2 meter), 9 lbs., no money dn., $5 mo. **$44.95**
Kit GP-11, Mobile Power Supply, 6 lbs. **$16.88**



HM-10A
$34.95

Heathkit HM-10A "Tunnel Dipper"

One Of The Handiest Instruments A Ham Can Own. Here's the modern version of the grid-dip meter. The all solid-state tunnel diode oscillator covers 3 to 260 mc . . . indicates resonance with the circuit under test (coils, antennas, etc.) by a dip in the meter reading. Doubles as an absorption wave meter. Easy to build. Gear-drive tuning provides smooth frequency control. Coils are epoxy coated for durability, and color coded to match the dial scales. Less battery.

Kit HM-10A, 3 lbs., no money dn., $5 mo. **$34.95**

"Cantenna" Dummy Load

Make "On-The-Air" Transmitter Checks Without Creating Harmful Interference. Run up to a kw with less than 1.5 V.S.W.R. on 50 ohm input. Usable to 300 mc. Less oil.

Kit HN-31, 3 lbs. **$9.95**



HN-31
$9.95

PM-2
$12.95



Heathkit Handy RF Power Meter

Shows Relative Power Output Of Transmitter . . . for checkup and tuning. Samples the RF field near the transmitter antenna. Range: 100 kc-250 mc.

Kit PM-2, 2 lbs. **$12.95**



HD-20
$14.95

Heathkit Crystal Calibrator

For Calibrating Communications Receivers . . . provides accurate signals every 100 kc from 100 kc to over 54 mc. Uses 9 v. battery . . . NEDA type 1600. (Not included.)

Kit HD-20, 1 lb. **$14.95**



HDP-293
$4.00

Radio Amateur's Handbook

Latest Edition . . . covers all phases of amateur radio electronics, plus tube & transistor data.

HDP-293, 3 lbs. **$4.00**

Heath Malmstadt-Enke Laboratory

New! . . . Multi-Speed Chart Drive For Heath Malmstadt-Enke Servo-Chart Recorders And Recording pH Meter/Electrometer

• All solid-state electronics • Instantaneous selection of 21 accurate speeds from 5 seconds to 2 hours per inch (12 inches/minute to 0.5 inches/hour) —when using internal line frequency signal • Unlimited variation in speeds up to 12 inches per minute when using an external chart drive signal • 21-position chart drive switch features five rate scales—seconds per inch, minutes per inch, hours per inch, inches per minute, and inches per hour • All chart speeds are as accurate as 60 cps AC line signal, when using internal drive signal • Auxiliary input terminals enable the chart motor to be programmed by external chart-drive signals • Output signal for synchronizing experimental events or synchronizing other recorders • Can be installed in any Heath EUW-20A Servo-Chart Recorder or EUW-301 Recording pH Meter/Electrometer • Includes complete, detailed instruction manual, giving step-by-step procedure for installation in Heath recorders • Factory wired and tested



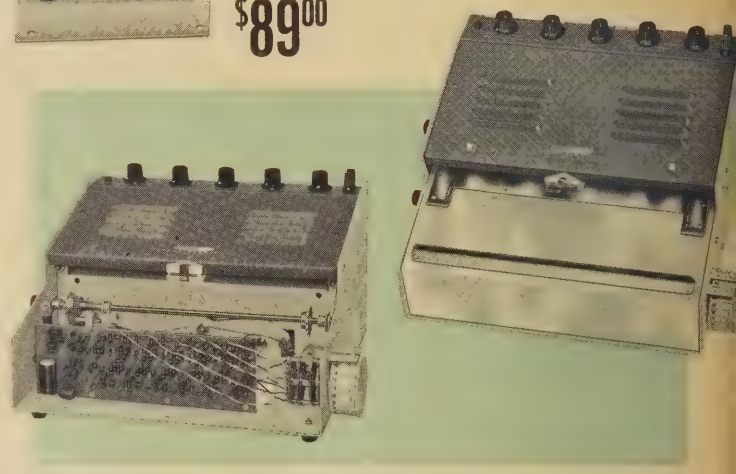
EUA-20-26
$89.00

Available Late April

New Heath Malmstadt-Enke Multi-Speed Chart Drive Sets New Standard For Laboratory Equipment . . . allows immediate selection of any one of 21 chart speeds from 12 inches per minute using internal signal (60 cps) to ½ inch per hour or an unlimited selection of chart speeds from 0 to 12 inches per minute (5 seconds/inch). This unique Heath Malmstadt-Enke innovation provides instantaneous switch selected changes on chart speed and is free from the backlash which is characteristic of gear-drive multispeed systems. Its pulse-type electronic circuitry enables other events to be synchronized with recorder readout (or the recorder to be operated in slave to the data system). Check out the specifications below.

EUA-20-26 Multi-speed Chart Drive, 4 lbs. **$89.00**

EUA-20-26 SPECIFICATIONS—Chart Speeds: 5 seconds to 2 hours per inch in 21 speeds, with internal signal. Any speed up to 5 seconds per inch with external signal. **External input:** Input terminals for external chart drive signals. **External signal requirements: Sine Wave;** 22 volts P-P min., 15-100 cps, 3 volts P-P min., 100 cps—10 kc. **Square Wave;** 3 volts P-P min., 0-10 kc. with 20 usec max rise & fall time. **Pulses;** 0-10,000 pulses per second—with minimum amplitude dependent on pulse duration. **Auxiliary output signal:** 4 v. P-P square wave, 20 usec rise time & 0.2 usec fall. **Auxiliary output impedance:** 68 ohms. **Controls:** 21-position Chart Speed Switch & External-Internal signal switch 32 diodes, 29 silicon transistors. **Power requirements:** 105-125 VAC 60 cps 30 watts.



Heath-Built Servo Chart Recorder . . . For Research & Education

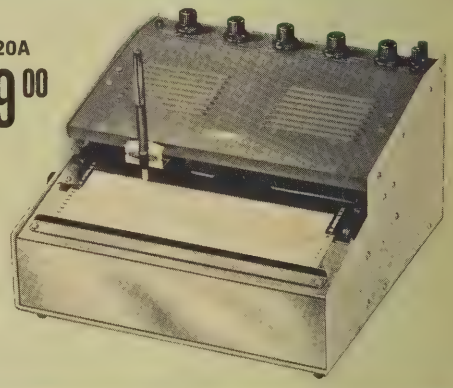
• Completely assembled, tested, ready to operate • Ideal for lab & school use • True potentiometric input on all ranges (10, 25, 50, 100 & 250 mv) • Plug-in 5-pin connectors for special ranges & modular plug-on accessory chassis • Input source resistance capability of greater than 100K ohms • Rapid chart advance, pen lift, paper tear-off guide • Excellent long-period stability

Can Be Used For "Read-Out" From A Multitude Of Experimental Set-Ups. Optional chart drive motors, or the multi-speed chart drive permit broad versatility to the available time scales, and the potentiometric input enables the Heath Servo Chart Recorder to be used with nearly all data outputs.

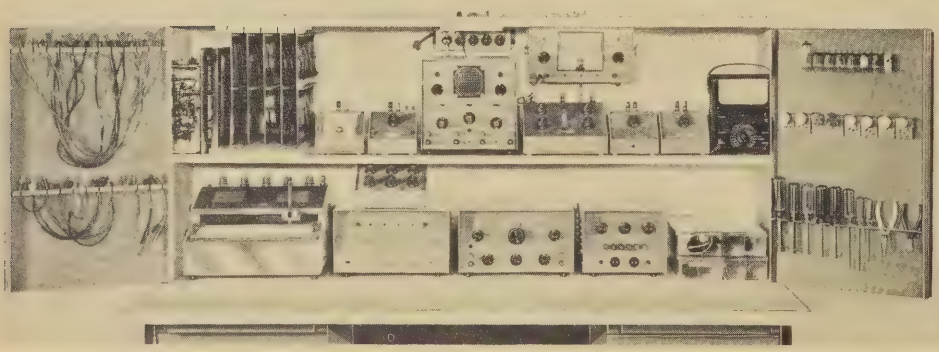
Send For Free Heath Malmstadt-Enke Laboratory Brochure . . . fully describes the Servo Chart Recorder as well as all other instruments of the basic lab.

EUW-20A, Chart Recorder, 23 lbs. **$199.00**
EUA-20-1, blank plug-in adapter chassis, 5 lbs. **$9.00**

EUW-20A
$199.00



Heath Malmstadt-Enke Instrumentation Laboratory



Here's A Complete Electronics Lab For Scientists And Engineers. All equipment is factory wired & tested. Provides a complete electronics adjunct to chemistry research or biochem lab . . . provides a complete university-level classroom unit for teaching electronics and instrumentation. Complete test & lab manual included.

EU-100A, 151 lbs. **$990.00**
EUP-22A, All-steel desk top cabinet, 105 lbs. **$130.00**



Free . . . Heath Malmstadt-Enke Laboratory Brochure

Describes the concept underlying Heath Malmstadt-Enke instrumentation. Gives full specifications and descriptions of the instruments in the basic Lab System.

Electronics And Instrumentation

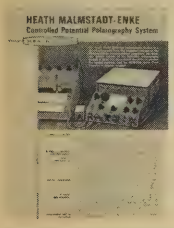
Heath Malmstadt-Enke Controlled Potential Polarography System

EUW-401
Complete Electronics
$480.00



• Includes all necessary electronic instrumentation for 2-electrode (conventional), 3-electrode (non-aqueous or high-resistance), manual polarography, and amperometric titrations • Provides schemes for qualitative & quantitative electrochemical analysis • May be used in both inorganic and organic chemistry—i.e., tests for traces of metallic ions in petroleum distillates, urine, etc., or for tests of purity from pesticides in dilute aqueous solutions • May be used for a multitude of highly sophisticated polarographic techniques when operated with suitable accessories • Completely assembled and tested • Includes detailed manual

An Outgrowth Of The Heath Malmstadt-Enke Concept Of Modular Electronics . . . the Heath Polarography Module EUA-19-2 couples by direct plug-in to the Malmstadt-Enke series Operational Amplifier EUW-19A, providing a highly versatile precision instrument for investigating polarographic chemistry.

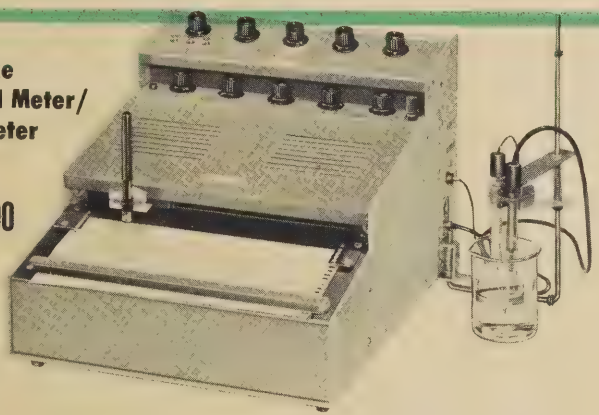


EUA-19-2 Polarography Module, 8 lbs. $185.00
EUW-19A Operational Amplifer, 22 lbs. $135.00
EUW-20A Chart Recorder, 23 lbs. $199.00
EUW-401 Complete Polarography System (consists of EUA-19-2, EUW-19A, EUW-20A), 53 lbs. $480.00

Free Brochure
Provides complete specifications of the EUW-401 System. Discusses the techniques of polarography. Briefly outlines experimental setups for various modes of polarography.

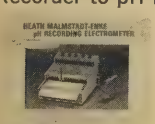
Heath Malmstadt-Enke Recording pH Meter/ Recording Electrometer

EUW-301
$300.00



For Classroom Use Or Educational Research . . . here's the perfect recording pH meter. Full scale spans of 1, 2, 5, 10, and 14 pH units (e.g.; shows full scale span of pH 4 to 5, or any other one pH unit from 0 to 14). Readable to 0.1% full scale. Repeatable to 0.5% full scale. Excellent readout for pH Stat, or control for automatic burettes.
Install The New Multi-Speed Chart Drive For A New High In Versatility! Virtually perfect stability of the pH Recorder, plus the new chart speeds available allow long period pH monitor such as pH monitor of lakes & streams, of biological processes, the growth of enzymes, as well as conventional titrations, etc.

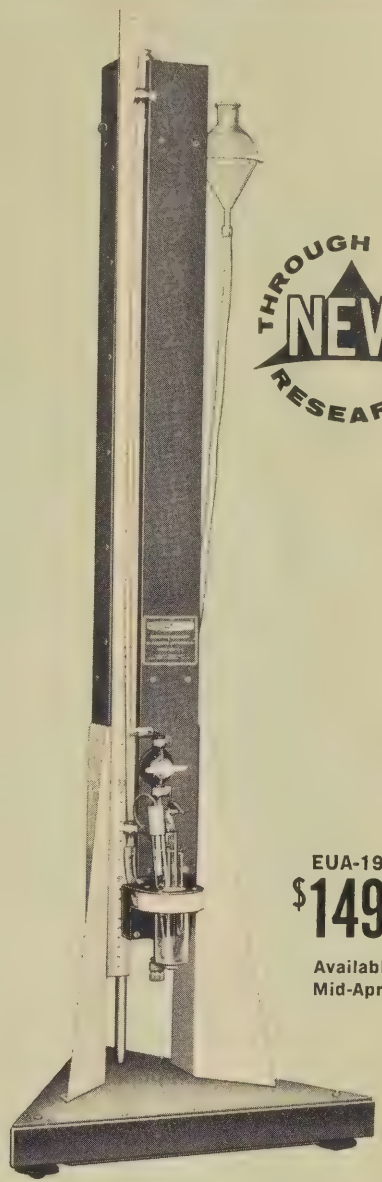
EUW-301, pH Recording Electrometer, 32 lbs. (pH electrodes not included) . . . no money down, $28 month. $300.00
EUA-20-23 New Sargent Combination pH Electrode. $38.00
EUA-20-11, pH Module only, 12 lbs. (converts Heath EUW-20A Servo-Recorder to pH Recording Electrometer) . . . no money down, $12 month. $125.00



EUA-301-1, Parts Kit, 2 lbs. (chopper, three 5-prong plugs and back cover) to convert recorder in EUW-301 to standard EUW-20A chart recorder $20.00

Send For FREE Brochure!
A brochure describing the functions and applications of the EUW-301 pH Recording Electrometer in detail is yours FREE by simply dropping a note or card with your name & address to the Heath Company, Benton Harbor, Michigan 49023.

THROUGH HEATH NEW RESEARCH



EUA-19-6
$149.00
Available Mid-April

New Equipment For Polarography!
Heath Malmstadt-Enke
Dropping Mercury Electrode Apparatus

• Includes all electrodes for 3-electrode controlled potential polarography—dropping mercury electrode (less Hg°), calomel reference electrode, platinum counter electrode • Exceptionally versatile—can be used for 2 or 3-electrode polarography, controlled potential electrolysis, controlled current electrolysis, chronopoteniometry, and amperometric titrations with Dropping Mercury Electrode • Easy to set up • Simple to operate • Teflon® stop cock on mercury supply • Adjustable mercury height • Mercury head scale adjusts to read height directly in mm. • Spring loaded cell holder for quick change of samples—usable with a wide variety of sample containers • Complete facilities for nitrogen purging—includes micrometer nitrogen flow valve • High mechanical stability • Built-in plumb for rapid leveling • Built from heavy gauge aluminum with enamel finish to resist corrosion • Upper section (less base) can be removed and attached to any standard laboratory rack • Includes all cables and connectors (preassembled) for operation with the Heath Malmstadt/Enke EUW-401 Polarography System

EUA-19-6 Dropping Mercury Electrode Apparatus, 15 lbs. $149.00

Heathkit® Educational Instruments



EK-1
$19.95

Basic Electricity Kit

Students & Beginners! . . . Learn basic electronics as you build this handy DC Volt-Ohm-Milliammeter. Kit-textbook combination. You'll discover a whole new world of knowledge as you probe into the mysteries of electronics.

Kit EK-1 (Less batteries), 4 lbs. **$19.95**



EK-2A
$18.75

Basic Radio Course—2 Parts

Part I begins with elementary theory—ends with the completion of a sensitive regenerative receiver. Part II continues with "learn-by-doing"—concludes with a 2-band superheterodyne receiver (requires EK-1 VOM above or equivalent to complete all experiments).

Basic Radio Part I (EK-2A), 7 lbs. **$18.75**
Basic Radio Part II (EK-2B), 5 lbs. **$18.75**
Accessory cabinet for completed receiver,
AK-8, 3 lbs. **$3.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

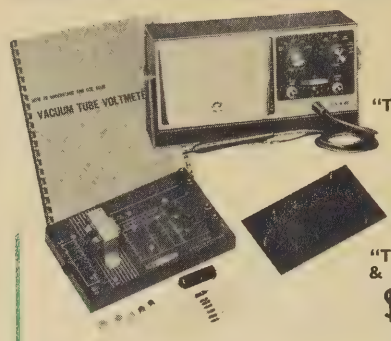
EK-3
$16.95



Basic Transistors . . .

This excellent "beginner" or "refresher" course reveals the "How" & "Why" of transistors. Probes into the nature of matter. You learn-by-doing as you build a two-transistor radio, wireless broadcaster, audio amplifier, test oscillator, and finally a 2-station intercom.

Kit EK-3, Basic Transistors, 4 lbs. **$16.95**



EF-1
"Text & Chassis"
$8.95

EF-1-4
"Text, Chassis & Instrument"
$39.95

"How To Understand & Use Your Vacuum Tube Voltmeter"

Learn theory, advantages, & applications of VTVM by "doing" with this kit-textbook course. Excellent for formal classes or self-teaching.

Kit EF-1, Text & special power supply (for VTVM owners), 3 lbs. **$8.95**
Kit EF-1-3 (EF-1 & IM-11 VTVM, pg. 44), 8 lbs., no money dn., $5 mo. **$32.50**
Kit EF-1-4 (EF-1 & IM-13 VTVM, pg. 44), 10 lbs., no money dn., $5 mo. **$39.95**
Manuals only for EF-1 (single copy). . . . **$5.00**
(10 or more). . . . . ea. **$3.00**



EF-2
"Text & Chassis"
$9.95

EF-2-3
"Text, Chassis & Instrument"
$66.95

"How To Understand & Use Your Oscilloscope"

Here's a stimulating course which is neither over the heads of beginners nor on too low a level for professionals. Big 169-page text is a valuable reference book.

Kit EF-2, Text, chassis & parts, 4 lbs. . . **$9.95**
Kit EF-2-3 (EF-2 & IO-21 Oscilloscope, pg. 43), 16 lbs., no money dn., $7 mo. **$66.95**
Kit EF-2-4 (EF-2 & IO-12 Oscilloscope, pg. 43), 28 lbs., no money dn., $9 mo. **$87.95**
Manuals only for EF-2 (single copy). . . . **$5.00**
(10 or more). . . . . ea. **$3.00**



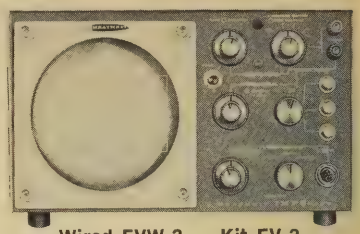
"How To Understand & Use Your Signal Generator"

EF-3
"Text & Chassis"
$11.95

EF-3-3
"Text, Chassis & Instrument"
$61.95

Learn the proper use of signal generators through this kit-text-book course. Includes test chassis with solderless "spring-clip" components plus valuable reference text.

Kit EF-3, Text, chassis & parts, 4 lbs. . . **$11.95**
Kit EF-3-2 (EF-3 & IG-102 RF Signal Generator, pg. 45), 10 lbs., no money down, $5 mo. **$37.95**
Kit EF-3-3 (EF-3 & IG-82 Sine-Square Audio Generator, pg. 46), 18 lbs. . .
no money dn., $7 mo. **$61.95**
Manuals only for EF-3 (single copy). . . . **$5.00**
(10 or more). . . . . ea. **$3.00**



Wired EVW-3 $265.00
Kit EV-3 $175.00

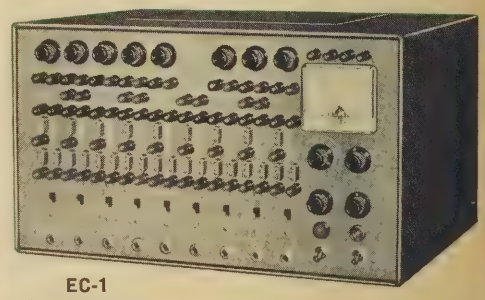
Heathkit IMPScope Displays Electrical Phenomena Of Muscles & Nerves . . . Brings Modern Instrumentation To School Biology & Physiology Labs

• Brings the most recent physiological instrumentation to the classroom • Shows human EKG, frog EKG, nerve & muscle action potentials • Stimulates new insight • Readily comprehendable—even by high school and junior high students • A high-gain oscilloscope with built-in stimulator • Not intended for medical diagnostic use

Kit EV-3, 27 lbs. . .
no money down, $17 month. **$175.00**
Assembled EVW-3, 28 lbs. . .
no money down, $23 month. **$265.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
EVA-3-1, Accessory Package: Includes nerve chamber, vector dolly, plethysmograph, frog electrodes & manual of instructions.
4 lbs. **$35.00**
EVW-3-1, Factory Assembled Accessories,
3 lbs. **$50.00**



Send For Free Brochure! Describes IMPScope, including full specifications. Discusses applications such as Human EKG, Frog EKG, Frog Sciatic Nerve Impulse, and many more.



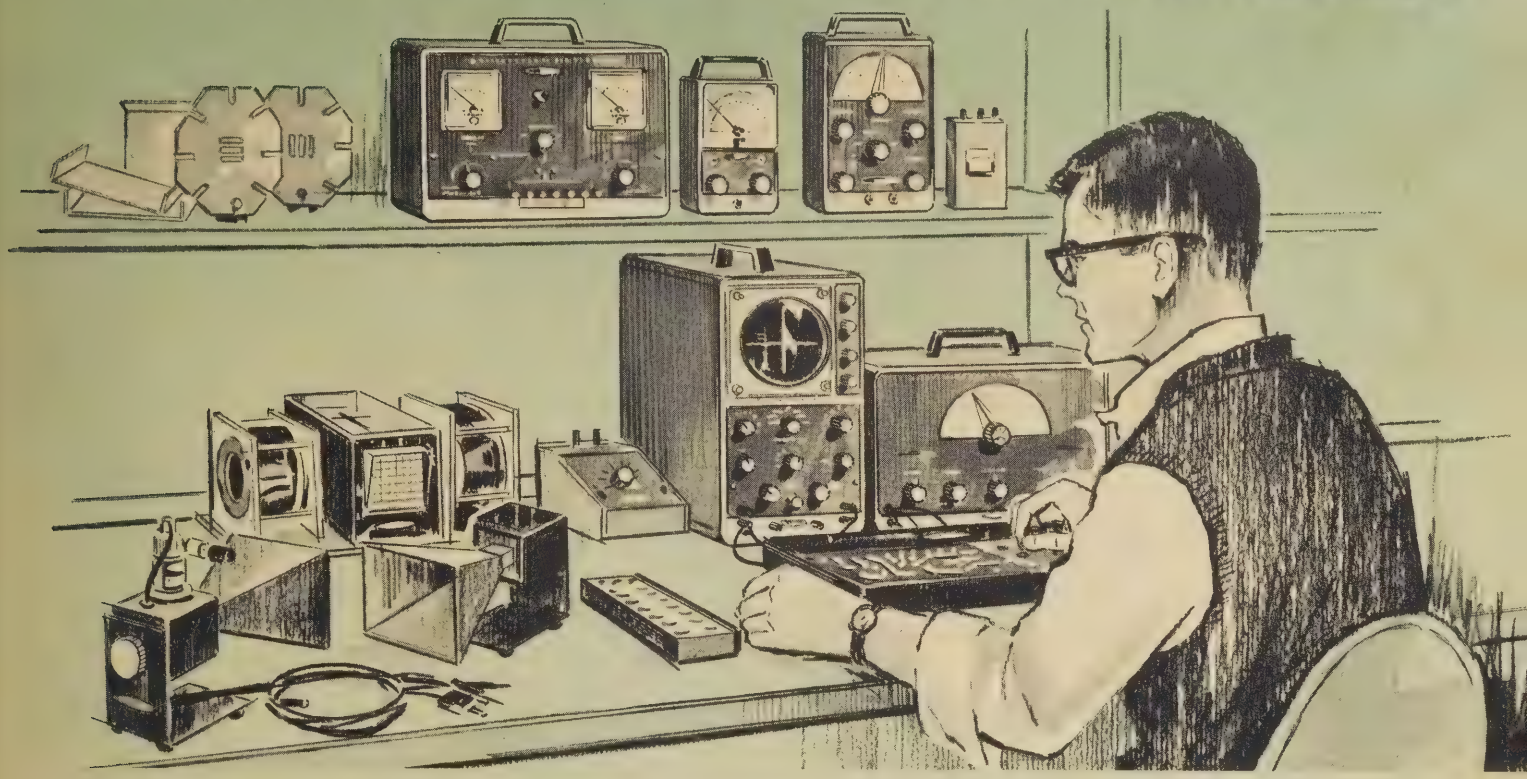
EC-1
$199.95

Heathkit Educational Electronic Analog Computer

Handles Scores Of Computer Problems! Adds, subtracts, multiplies, divides . . . solves problems as complex as two simultaneous 2nd order differential equations. Features 9 DC amplifiers, 3 initial condition power supplies, and 5 coefficient potentiometers. Provisions for balancing without removing problem setup.

Kit EC-1 . . . 48 lbs.,
no money dn., $19 mo. **$199.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

Berkeley Physics Laboratory... Now With New Part B Instrumentation



Berkeley Physics Laboratory...Now With Parts A & B

Heath, Manufacturer Of Test Instruments & Materials As Used At Berkeley . . . now provides complete instrumentation facilities for outfitting Berkeley-type college physics laboratories. One basic Heath Berkeley Physics Laboratory station includes all the instruments needed by two student groups to perform all of the experiments of the Berkeley course. Special component groups for Parts A, B & C, of the course can be supplied separately as they continue to become available. Order the instruments, plus the components for Parts A & B for initial outfitting.

A Modern And Complete Lab System . . . The Berkeley Physics Laboratory Part A consists of six high quality test instruments and two laboratory component sets plus battery set. Each instrument is rated for professional research and testing and will provide classroom experience comparable to the modern electronics or research laboratory. The component sets, test chassis and cathode ray tube with deflection coils, are up to date in every respect, and reflect the leadership in electronics and instrumentation gained by Heath. All units meet the instrumentation and power requirements for the Berkeley Physics Laboratory.

Accurate, Dependable Data Starts Here . . . The Heath components for Part B of the Berkeley Physics Laboratory are designed for efficiency and practicality. Large microwave horn antennas give "workable" strength to signals. The klystron is readily available (should replacement ever be necessary). The delay line, housed in a sturdy enclosure, features banana-jack plug-in for quick, sure electrical contact. And standard small parts permit "open-ended" experiments at very low cost.

Complete Specifications On Each Instrument & Component . . . are shown in the FREE Berkeley Physics Laboratory brochure supplied by Heath. The Berkeley Physics Laboratory Manual is available from McGraw-Hill Book Co. and Heath Co. And only Heath offers a complete instrumentation manual (The Heath Berkeley Physics Instrumentation Manual), showing both schematic and pictorial wiring diagrams for Berkeley Laboratory experimental setups, as well as complete descriptions of each instrument . . . write for this valuable manual!
Part A, Order Nos. 595-764 & 7012P246.....$2.00
Part B, Order Nos. 595-812 & 7012P297.....$2.00

Kit EP-100A, complete 2-student lab station with Part A, 110 lbs. **$399.00**
Assembled EPW-100A, complete 2-student lab station with Part A, 110 lbs. **$559.00**

Kit EP-100B, complete 2-student lab station with Part B, 100 lbs. **$439.00**
Assembled EPW-100B, complete 2-student lab station with Part B, 100 lbs. **$599.00**

Ⓐ **Laboratory 5" Oscilloscope**
Kit IO-12S $79.95
Assembled IOW-12S $134.95

Ⓑ **Cathode-Ray Tube & Deflection Coil Set**
Includes binder & lab manual for Part A, Assembled EPW-24, 33 lbs..$115.00

Ⓒ **RF Signal Generator**
Kit IG-102S $30.00
Assembled IGW-102S $60.00

Ⓓ **Regulated Power Supply**
Kit IP-32 .....$56.95
Assembled IPW-32 .....$84.95

Ⓔ **Sine-Square Wave Generator**
Kit IG-82 .....$51.95
Assembled EUW-27 .....$94.00

Ⓕ **Transistorized Power Supply**
Assembled EUW-17.
0-35 VDC. $20.00

Ⓖ **Vacuum Tube Voltmeter**
Kit Model IM-11.....$24.95
Assembled IMW-11 .....$39.95

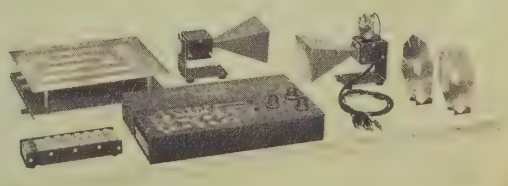
Ⓗ **Test Chassis And Small Parts**
Includes binder & lab manual for Part A. Assembled.
EPW-14, 9 lbs. $60.00

EPA-10-1 Battery Set For Berkeley Physics Lab (Not Shown)
Consists of one 0–22½–45 V. battery & one 0–1½–3–4½–6–7½ V. battery. 2 lbs. $5.00



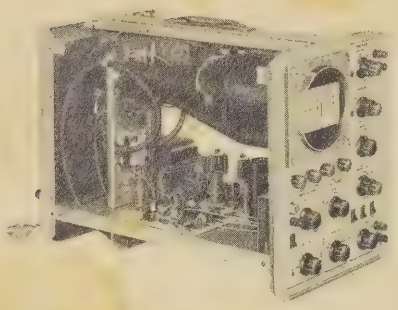
New Part B Accessories...
Order For April Delivery

Test Chassis & Accessories, Part B. Assembled EPW-15, 14 lbs. $125.00
Microwave Transmitter And Receiver Set, Part B. Assembled EPW-25, 8 lbs..... $115.00. **Battery Set,** Part B. Not shown. EPA-10-2, 2 lbs..... ..... $5.00



SEND FOR FREE NEW BROCHURE . . . fully describes instruments & components.

Heath Research . . . Creating Innovations



Sharpest Trace—assured by 4,250v. accelerating potential and high-nickel alloy CRT shield. **Matched, Magnetic-Core Delay Lines**—precision, cable type, for fast rise-time pulse work.

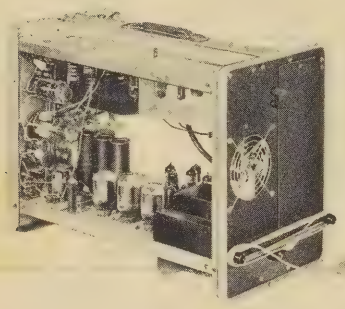


Rear Access Door—for direct plate connections. **Circuit Breaker**—for complete protection. **Z-Axis Terminals. 3-Wire Line Cord**—with holders. **Fan Cooling**—with blade guard.

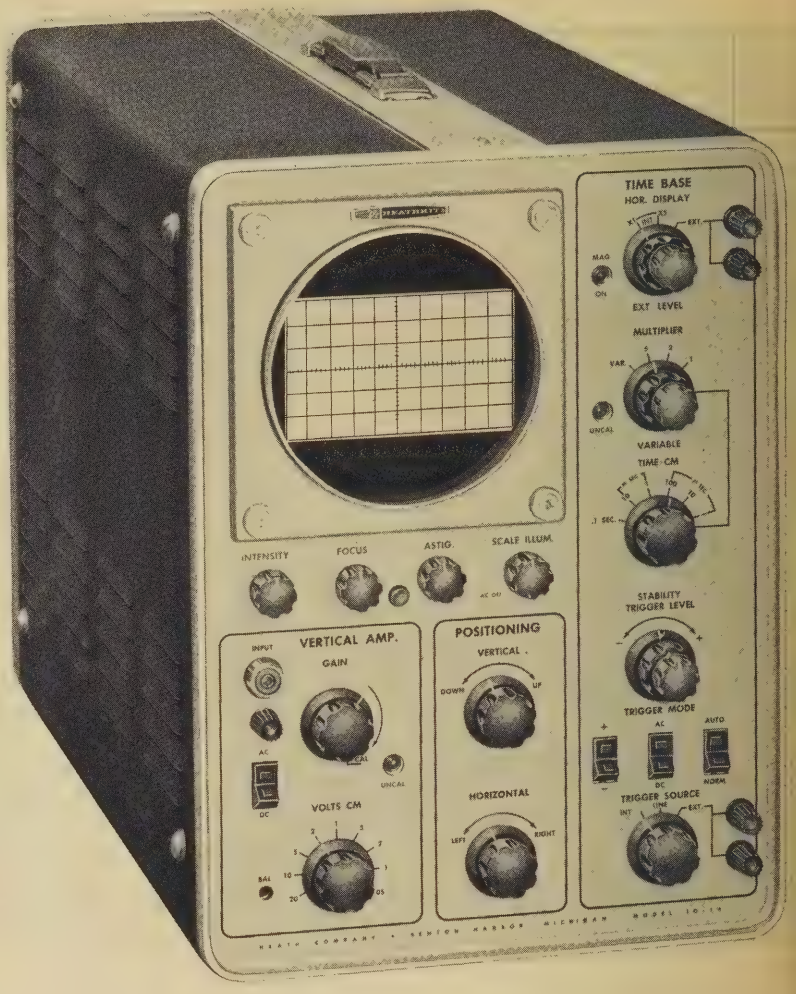
THROUGH HEATH NEW RESEARCH

Kit IO-14
$299.00
Available Mid-April

Assembled IOW-14
$399.00
Available Late May



Easy To Build—5 circuit boards and wiring harness. **Rugged**—heavy-duty transformer—forced-air cooling—"U" girder, all-aluminum construction for rigidity.



NEW Heathkit IO-14 Professional DC Oscilloscope Sets A New Precedent For Performance And Value In Precision Test Instruments

Eighteen Years Ago Heath Broke The Price Barrier On Oscilloscopes With A Low-Cost Scope For Hams, Hobbyists, And Service Technicians. Now Heath Breaks The Price Barrier Again! . . . With A Precision, Fast-Response, Triggered Sweep, Delay Line Oscilloscope For The Serious Experimenter, Industrial Or Academic Laboratory, And Medical Or Physiology Research Laboratory.

• A high stability 5" DC oscilloscope with triggered sweep • DC to 8 mc bandwidth and 40 nanosecond rise time • Vertical signal delay through high linearity delay lines—capable of faithful reproduction of signal waveforms far beyond the bandwidth of the scope • Calibrated vertical attenuation • Calibrated time base • Forced air cooling • Input for Z axis modulation • Input for direct access to vertical deflection plates • Easy circuit board construction & wiring harness assembly • Components are packaged separately for each phase of construction • Easy to align • Fulfills many production and laboratory requirements at far less cost than comparable equipment—particularly scopes capable of fast-rise waveform analysis • No special order for export version required—wiring options enable 115/230 volt, 50-60 cycle operation

Here Is A Truly Sophisticated Instrument . . . designed with modern circuitry, engineered with high quality, precision-tolerance components, and capable of satisfying the most critical demands for performance. The IO-14 features precision delay-line circuitry to allow the horizontal sweep to trigger "ahead" of the incoming vertical signal. This allows the leading edge of the signal waveform to be accurately displayed after the sweep is initiated. What is more, the IO-14's delay line is capable of reproducing sharp rise time signals far beyond the high frequency limitations of the oscilloscope. This assures the utmost ability for critical analysis of signal waveform characteristics . . . right up to the limits of the published specifications.

The IO-14 Provides Features You Expect Only In High Priced Oscilloscopes. For example, a calibrated vertical attenuator, a 5X sweep magnifier, and a magnifier indicator lamp . . . external sweep input and external trigger input . . . and many others, including an accurately engraved graticule with variable intensity lighting for optimum results in 'scope photography.

Precision Small Parts Are Used Throughout. Switches are quality, ball-detent type. All major control potentiometers are precision, high-quality sealed components. All critical resistors are 1% precision. And circuit boards are low-loss fiber glass laminate.

Built For Continuous Use . . . Rugged Abuse. The IO-14's cabinet is heavy gauge aluminum. The chassis and components are well supported structurally. The CR tube is shielded against stray magnetic fields, and forced air ventilation allows the IO-14 to be operated continuously under the demands of industrial use. Even the power transformer is husky, well rated, and constructed with a copper band enclosing the windings & iron to limit the external magnetic field. Here is a scope that's built to "take it."

Order The IO-14 For The Ultimate Value In Oscilloscopes.

Kit IO-14, 45 lbs. . . no money dn., $28 mo. **$299.00**
Assembled IOW-14, 45 lbs. . . $40 dn., as low as $23 mo. **$399.00**

Kit IOA-14-1, Scope Probe. Features: Switch selection of direct or X10 attenuation, adjustable trimmer capacitor to match IO-14 input, "squeeze-to-grip" tip. Available soon.

IO-14 SPECIFICATIONS—(Vertical) Sensitivity: 0.05 v/cm AC or DC. **Frequency response:** DC to 5 mc, —1 db or less; DC to 8 mc, —3 db or less. **Rise time:** 40 nsec (0.04 microseconds) or less. **Input impedance:** 1 megohm shunted by 15 uuf. **Signal delay:** 0.25 microsecond. **Attenuator:** 9-position, compensated, calibrated in 1, 2, 5 sequence from 0.05 v/cm. **Accuracy:** ±3% on each step with continuously variable control (uncalibrated) between each step. **Maximum input voltage:** 600 volts peak-to-peak; 120 volts provides full 6 cm pattern in least sensitive position. **(Horizontal) Time base:** Triggered with 18 calibrated rates in 1, 2, 5 sequence from 0.5 sec/cm to 1 microsecond/cm with ±3% accuracy or continuously variable control position (uncalibrated). **Sweep magnifier:** X5, so that fastest sweep rate becomes 0.2 microseconds/cm with magnifier on. (Overall time base accuracy ±5% when magnifier is on.) **Triggering capability:** Internal, external, or line signals may be switch selected. Switch selection of + or — slope. Variable control on slope level. Either AC or DC coupling. "Auto" position. **Triggering requirements:** Internal; ½ cm to 6 cm display. **External:** 0.5 volts to 120 volts peak-to-peak. **Horizontal input:** 1.0 v/cm sensitivity (uncalibrated) continuous gain control. Bandwidth: DC to 200 kc ± 3 db. (General) 5ADP31 or 5ADP2 Flat Face C.R.T. interchangeable with any 5AD or 5AB series tube for different phosphor characteristics. 4250 V. accelerating potential. 6 x 10 cm edge lighted graticule with 1 cm major divisions & 2 mm minor divisions. **Power supply:** All voltages electronically regulated over range of 105-125 VAC or 210-250 VAC 50/60 cycle input. Z Axis Input provided. DC coupled CRT unblanking for complete retrace suppression. **Power requirements:** 285 watts. 115 or 230 VAC 50-60 cps. **Cabinet dimensions:** 15" H x 10½" W x 22" D. includes clearance for handle and knobs. **Net weight:** 40 lbs.

n Electronics For Nearly Two Decades

Heathkit "Extra-Duty" Wide-Band 5" Oscilloscope!

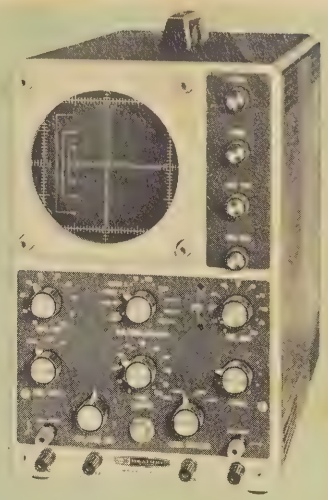
• Full 5 mc bandwidth for color TV servicing • Heath patented sweep circuit—10 cps to 500 kc • Push-pull vertical & horizontal output • Two circuit boards & wiring harness for fast, easy assembly • Available kit or wired

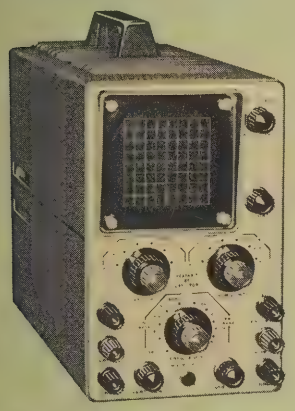
Thousands In Use Across The Nation! Service shops, laboratories, schools, industry and home workshops at home & abroad attest to its fine performance. Boasts clear, sharp pattern displays . . . excellent linearity and lock-in characteristcs . . . wide band amplifiers . . . peak-to-peak calibration reference . . . automatic sync circuit . . . Z-axis input . . . positive trace position controls . . . and much more for versatile performance.

Kit IO-12, 24 lbs., no money dn., $8 mo. **$79.95**
Assembled IOW-12, 24 lbs., no money dn., $13 mo. **$134.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
See page 40 for combination offer with EF-2 Applications Course. **$87.95**

IO-12 SPECIFICATIONS—Vertical Sensitivity: 0.025 volts RMS per inch at 1 kc. **Frequency response (referred to 1 kc level):** ±1 db 8 cps to 2.5 mc; +1.5 to —5 db, 3 cps to 5 mc; response at 3.58 mc, —2.2 db. **Rise time:** 0.08 microseconds or less. **Input impedance:** (AT 1 KC) 2.7 megohms at X1, 3.3 megohms at X10 and X100. **Horizontal sensitivity:** 0.3 volts RMS per inch at 1 kc. **Frequency response:** ±1 db 1 cps to 200 kc; ±3 db 1 cps to 400 kc. **Input impedance:** 4.9 megohms at 1 kc. **Sweep generator:** Range—10 cps to 500 kc in five steps, variable, plus any 2 switch-selected preset sweep frequencies in this range. **Synchronizing:** automatic lock-in circuit using self-limiting synchronizing cathode follower. **Power requirements:** 105-125 volts 50/60 cycles AC at 80 watts; fused. **Dimensions:** 14⅛" H x 8⅝" W x 16" D.

Kit **$79.95**
Wired **$134.95**





IO-10 **$94.95**

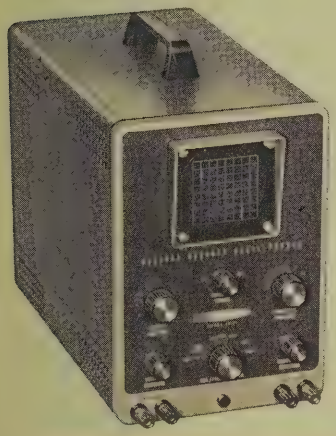
Heathkit "Space-Saver" 3" DC Oscilloscope . . . Ideal For AC Or DC Applications!

• Identical DC or AC coupled vertical & horizontal amplifiers • DC to 200 kc bandwidth • Recurrent sweep generator, 5 cps to 50 kc in four ranges • Small, compact, easy to carry

Excellent Where Extremely Low Sweep Rates Are Desired! Features front-panel mounted external capacitance binding posts for lower sweep rates. Ideal for tests "on" or "away" from the test bench. Serves many applications in medical and industrial fields as well as general service work. Other features include 3RP1 CR tube, special-alloy CR tube shield to minimize trace distortion, regulated power supply, astigmatism control, and less than 5° phase-shift between channels.

Kit IO-10, 16 lbs., no money dn., $10 mo. **$94.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IO-10 SPECIFICATIONS—(Vertical and horizontal channels identical): Bandwidth; DC to 200 kc (2 db point). **Sensitivity:** 0.1 V (peak-to-peak) per ¼" (uncalibrated). **Attenuator:** 3-position, compensated type. **Gain control:** Continuously variable. **Input impedance:** 3.6 megohms shunted by 35 mmf. **Coupling:** Either AC or DC, switch-selected. **Relative phase shift between channels:** Less than 5°. **Sweep generator (Recurrent type):** Linear saw-tooth produced by multivibrator type generator covering 5 cps to 50 kc in four overlapping ranges. "External capacitance" binding post for lower sweep rates. **Sync provision:** Either internal or external, switch-selected. **Power requirements:** 105-125 V 50-60 cycle AC at 100 watts max. **Dimensions:** 7⅝" H x 4⅝" W x 11" D.



IO-21 **$58.95**

Heathkit "General Purpose" 3" Oscilloscope . . . An Ideal "First" Scope!

• Push-pull vertical & horizontal amplifiers • Wide range sweep—20 to 100,000 cps • Automatic sync • Retrace blanking • Clean open circuit layout for easy assembly

Compact . . . Lightweight . . . Versatile! Fills hundreds of daily requirements in servicing! Ideal for home workshop, ham shack, or an extra scope for all-around use . . . perfect for students or beginners just starting in electronics. Other features include input sensitivity of .25 volts RMS/inch peak-to-peak deflection at 1 kc; focus & astigmatism control for sharp, fine trace; well-rated power supply & special alloy neck shield for 3RP1 CR tube to minimize trace distortion.

Kit IO-21, 12 lbs., no money dn., $6 mo. **$58.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
See page 40 for combination offer with EF-2 Applications Course.

IO-21 SPECIFICATIONS—(Vertical and horizontal amplifiers identical): Frequency response: ±2 db, 2 cps to 200 kc. **Sensitivity:** .25 volts RMS/inch P-P deflection at 1 kc. **Input impedance:** 10 megohms shunted by 20 uuf. (Direct connection to vertical CRT plates on rear panel). **Sweep generator:** Range, 20-100,000 cps. Automatic sync. retrace blanking. **Tube complement:** (1) 3RP1 (CR tube), (4) 12AU7 (deflection amplifiers), (1) 12AX7 (sweep generator), (1) 6x4 (LV rectifier), (1) 1V2 (HV rectifier). **Controls:** Gain controls, Horizontal & Vertical; Centering controls, Horizontal & Vertical; Frequency Vernier; Horizontal Input, Sweep Range switch. (Focus and Astigmatism controls mounted on chassis). **Power requirements:** 105-125 volts AC, 50-60 cycle, 40 watts. **Dimensions:** 9½" H x 6½" W x 10" D.

Scope Demodulator Probe Kit

Adds versatility to oscilloscope applications by permitting visual observation of the modulation envelope waveform of RF and IF signals. Useful in both radio and TV servicing in checking for distortion and presence or absence of modulation. Functions as an AM detector . . . passes only modulation of signal. Voltage limits are 30 volts RMS, 500 volts DC.

Kit 337-C, 1 lb. **$3.50**
Assembled 337W-C, 1 lb. **$4.50**

Low-Capacitance Oscilloscope Probe Kit

An essential aid for high frequency work! The PK-1 minimizes loss of gain, circuit loading or distortion due to overloading of scope input. A switch on the probe body provides direct or X10 attenuated operation and an adjustable trimmer capacitor provides proper match to scope input. Kit includes an assortment of connectors to match most oscilloscope terminals.

Kit PK-1, 1 lb. **$4.95**

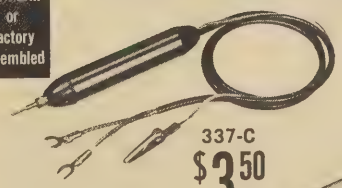
Heathkit Electronic Switch Kit

Extends oscilloscope operation by permitting simultaneous observation of two different signals on CR tube screen. Produces both signals alternately at any one of four switching rates. Position control allows superimposing or separating signals for comparison purposes. ±1 db from 0 to 100 kc.

Kit ID-22, 7 lbs. **$23.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

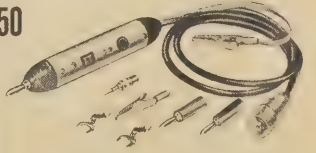
SCOPE PROBE ACCESSORIES

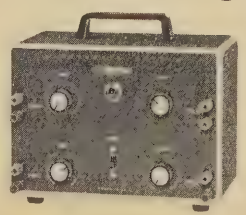
Kit Form or Factory Assembled



PK-1 **$4.95**

337-C **$3.50**





ID-22 **$23.95**

Engineered For Quality . . .

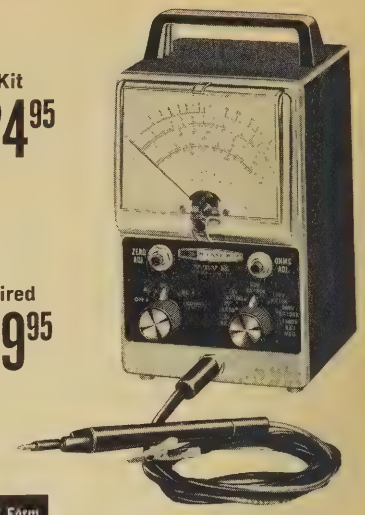
Price Is Just One Reason Why This Is The World's Most Popular VTVM

• One probe makes all measurements • 7 AC, 7 DC, 7 Ohms ranges • Easy to read, sensitive 4½" 200 ua meter • 1% precision resistors • Extended frequency response ±1 db 25 cps to 1 mc • Measures RMS and Peak-to-Peak • Easy, stable circuit board construction

It's true that the Heathkit IM-11 costs just 45c more than its predecessor of 15 years ago, but it also embodies numerous circuit refinements and improvements which make it a highly accurate and dependable instrument for any phase of electronic measurement. Just compare its features and specifications. Test leads and probe are included, but not the battery. Order your IM-11 today, find out why hundreds of thousands are in use the world over.

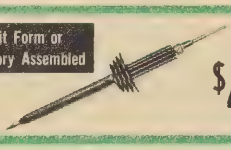
Kit IM-11, 5 lbs., no money dn., $5 mo. **$24.95**
Assembled IMW-11, 5 lbs., no money dn., $5 mo. **$39.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
See page 40 for combination offer with EF-1 Applications Course. No money dn., $5 mo. . **$32.50**

IM-11 SPECIFICATIONS—Meter scales: DC & AC (RMS): 0-1.5, 5, 15, 50, 150, 500, 1500 volts full scale. **AC peak-to-peak:** 0.4, 14, 40, 140, 400, 1400, 4000. **Resistance:** 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures .1 ohm to 1000 megohms with internal battery. **Meter:** 4½" 200 ua movement. **Multipliers:** 1% precision type. **Input resistance DC:** 11 megohms (1 megohm in probe) on all ranges. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ±3%, AC ±5% of full scale. **Frequency response:** ±1 db 25 cps to 1 mc (600 ohm source). **Tubes:** 12AU7, 6AL5. **Battery requirements:** 1.5 volt, size "C" flashlight cell (not included). **Power requirements:** 105-125 volt 50/60 cycle AC, 10 watts. **Dimensions:** 7⅜" H x 4-11/16" W x 4⅛" D.



Kit $24.95
Wired $39.95

Kit Form or Factory Assembled



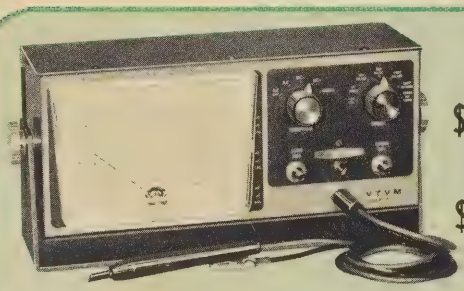
Kit Form or Factory Assembled

336 $4.50

30,000 Volt DC High Voltage Probe

Extends DC ranges of any 11-megohm VTVM to 30,000 volts for TV service work and other high voltage applications.

Kit 336, 1 lb. **$4.50**
Assembled 336W, 1 lb. **$5.50**



Heathkit "Service Bench" VTVM . . . Professional Features & Performance!

Kit $32.95
Wired $49.95

Engineered Right, Shaped Right, Priced Right For "In-Shop" Servicing! Easy-to-read 6" 200 ua meter features multi-color scales with separate 1.5 & 5 v. AC scales. No more confusing tangle of test leads, thanks to single AC/Ohms/DC test probe. Simple to operate . . . just a function selector and range selector, separate Zero & Ohms adjust controls. All calibration controls accessible from front panel. Available kit or factory assembled.

Kit IM-13, 7 lbs., no money dn., $5 mo. **$32.95**
Assembled IMW-13, 8 lbs., no money dn., $5 mo. **$49.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.
See page 40 for combination offer with EF-1 Applications Course.

IM-13 SPECIFICATIONS—Meter scales DC & AC (RMS): 0-1.5, 5, 15, 50, 150, 500, 1500 volts full scale (1.5 and 5 volt AC ranges read on separate scales). **Ohmmeter:** Scale with 10 ohm center x1, x10, x100, x1000, x10K, x100K, x1 meg. Measures 1 ohm to 1000 megohms with internal battery. **Dividers:** 1% precision type. **Meter:** 6" 200 ua movement. **DC Input resistance:** 11 megohms (1 megohm in probe) on all ranges. **AC Input impedance:** 1 megohm shunted by 40 uuf (measured at input terminals). **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ±3%, AC ±5% of full scale. **Frequency response:** ±1 db 25 cps to 1 mc (600 ohm source). **Tubes:** 12AU7, 6AL5. **Battery:** 1.5 volt size "C" flashlight cell. **Power requirements:** 105-125 volts 50/60 cycle AC 10 watts. **Dimensions:** 5" H x 12-11/16" W x 4¾" D.

• Measures AC volts, DC volts, Resistance & DB • Separate 1.5 & 5 volt AC scales for high accuracy • Gimbal bracket for easy under-shelf, bench top or wall mounting • Tilts to any angle for best viewing • Big 6" 200 ua meter • Single test probe for operating convenience • 1% precision resistors



Kit Form or Factory Assembled

309-C $3.50

Etched Circuit RF Probe

Use with any 11-megohm VTVM to extend RF measurements up to 250 megacycles.

Kit 309-C, 1 lb. **$3.50**
Assembled 309W-C, 1 lb. **$4.50**



Heathkit 20,000 Ohms/Volt VOM... Portable, Highly Accurate!

MM-1
$29.95

• Measures voltage, current & resistance • 35 meter ranges on 2-color scale • Sensitive 50 microampere 4½" meter • 1% precision resistors for high accuracy • Polarity reversing switch —eliminates transferring test leads • Molded plastic case

Ideal Meter For All-Around Service Applications! Provides wide voltage, current, resistance & db ranges to cover virtually any service requirement. Battery power, compact size make it equally useful for field or test bench applications. Test leads included. Less batteries.

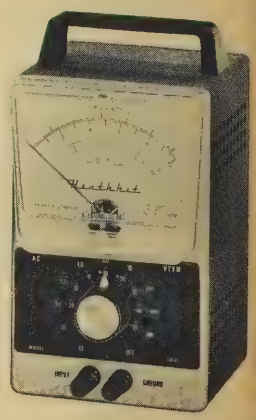
Kit MM-1, 5 lbs., no money dn., $5 mo. **$29.95**

MM-1 SPECIFICATIONS—Sensitivity: 20,000 ohms/volt DC, 5,000 ohms/volt AC. **Range AC & DC volts:** Full scale, 1.5, 5, 50, 150, 500, 1500, 5000. **Direct current:** 150 microamperes, 15, 150, 500 milliamperes, 15 amperes. **Ohmmeter:** 0.2 ohms to 20 megohms in three ranges. **Decibels:** —10 to +65 db. **Resistors:** 1% precision type. **Accuracy:** ±3% of full scale. **Controls:** Range switch, Output—AC—DC—reverse DC switch. Ohms adjust control. **Batteries:** 1 type "C" cell, 4 penlight cells. **Dimensions:** 7½" x 5½" x 4".

For Precision AC Work, Choose This Heathkit Laboratory AC VTVM!

Kit $33.95
Wired $52.95

• 10 voltage ranges—0.01 to 300 volts RMS full scale • Extended frequency response, ±1 db from 10 cps to 500 kc • 10 megohm input impedance for high accuracy • Calibrated DB scale for audio measurements



Accurate Low-Level AC Measurements! Measures AC voltages from 1 millivolt to 300 volts RMS with excellent accuracy. VU-type ballistic damping of meter movement, high input impedance, wide frequency response, high sensitivity, & the excellent stability designed into this instrument assure outstanding results in every application. Order yours now!

Kit IM-21, 5 lbs., no money dn., $5 mo. **$33.95**
Assembled IMW-21, 5 lbs., no money dn., $6 mo. **$52.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IM-21 SPECIFICATIONS—Frequency response: ±1 db 10 cps to 500 kc, ±2 db 10 cps to 1 mc, all ranges. **Ranges:** Ten ranges from 0.01 to 300 volts RMS full scale. **Decibels:** ten switch selected ranges from —40 db to +50 db in 10 db steps. **Input impedance:** Total range —52 to +52 db, meter scale —12 to +2 db. (0 db = 1 mw in 600 ohms), 10 megohms shunted by 12 uuf on ranges 10 to 300 volts; 10 megohms shunted by 22 uuf on ranges .01 to 3 volts. **Tube complement:** (1) 6AW8, (1) 6EJ7/EF-184. **Accuracy:** Within 5% of full scale. **Power requirements:** 105-125 volts AC, 50-60 cycles, 10 watts. **Dimensions:** 7⅜" H x 4-11/16" W x 4⅛" D.

Priced For Savings . . . Heathkit® Test Gear

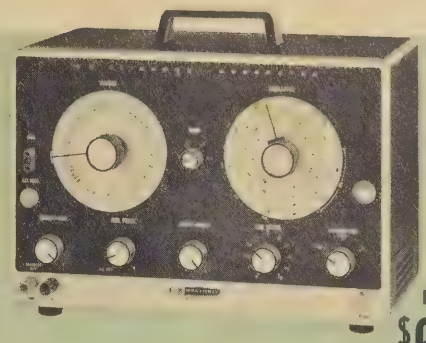
TV Sweep Alignment Generator . . . Speeds Alignment Of FM & TV Receivers!

• Stable, all-electronic sweep circuit • Complete FM & VHF TV coverage—3.6 to 220 mc • Built-in crystal & variable marker oscillators • Versatile, easy to operate, reliable

Produces Wide Range Sweeps With Excellent Linearity & Stability! Fixed & variable attenuators give smooth control of signal output to allow alignment of high gain stages without danger of overloading. Crystal included provides output at 4.5 mc & multiples thereof for calibrating built-in variable marker oscillator.

Kit IG-52, 14 lbs., no money dn., $7 mo. **$67.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-52 SPECIFICATIONS—Output impedance: 50 ohms terminated at both ends of cable. **Sweep deviation:** Continuously variable from 0-4 mc lowest max. deviation to 0-42 mc highest max. deviation (depending on base frequency). **Crystal marker:** 4.5 mc and multiples thereof. **Variable marker:** 19 mc to 60 mc on fundamentals, 57 mc to 180 mc on harmonics. **External marker terminals:** Provided on panel. **Attenuators:** Step-switch controls sweep and marker oscillators together, plus variable controls for each output. **Blanking:** Converts return trace into zero reference line, phasing control also provided. **Cables:** 3 supplied, output, scope horizontal, scope vertical. **Power requirements:** 105-125 VAC, 60 cycles, 50 watts. **Dimensions:** 13" W x 8½" H x 7" D.



IG-52 **$67.95**

Heathkit Color Bar & Dot Generator . . . Simplifies Color & B/W TV Servicing!

• Produces 6 different patterns for picture adjustment • 10 vertical color bars • Special shading bar pattern for screen & background adjustments • Crystal-controlled for accuracy & stability

Best Buy In Color TV Service Instrument! Provides instant switch selection of 6 different patterns . . . white dots, crosshatch, vertical bars, horizontal bars, 10 color bars & a special shading pattern. Crystal-controlled sync pulses lock patterns firmly on screen for linearity, color or convergence adjustments. Complete with crystals, test lead & instructions. Easy to build.

Kit IG-62, 13 lbs., no money dn., $7 mo. **$64.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-62 SPECIFICATIONS—RF output frequency range: TV channels 2 through 6. **Output voltage:** Variable from 100 to 100,000 microvolts. **Sound carrier:** Crystal controlled, unmodulated, 4.5 mc away from picture carrier; off-on switch provided. **Video output:** Positive or negative output variable from 0-10 volts peak-to-peak open circuit. **Modulation:** White dot pattern, cross hatch pattern, horizontal bars, vertical bars, 10 vertical color bars, shading bar pattern. **Power requirements:** 117 VAC, 50/60 cycles, 70 watts. **Dimensions:** 13" W x 8½" H x 7" D.



IG-62 **$64.95**

Heathkit FM Stereo Generator . . . Adds Extra Profits To Service Operations!

• Provides virtually all signals required for trouble-shooting & alignment of multiplex adapters, FM tuners & receivers • Switch selection of 400 cps, 1000 cps, 5000 cps, 19 kc, 38 kc & 65 kc or 67 kc SCA signals • Built-in marker oscillator for I.F. and dial tracking checks

A Self-Contained FM Service Center! Produces an audio or composite stereo signal for multiplex adapter adjustments . . . an RF carrier for tuner & receiver adjustments . . . a "phase-test" function for accurate adjustment of sub-carrier transformers . . . a variable level crystal-controlled 19 kc (±2 cps) pilot signal to check lock-in range of stereo receivers, and built-in sweep & marker signals for overall RF & IF alignment. Complete with test leads, and detailed stereo alignment instructions.

Kit IG-112, 11 lbs., no money dn., $10 mo. **$99.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-112 SPECIFICATIONS—RF Signal output: Center frequency: 100 mc adjustable by appox. ±2 mc. **Pilot modulating frequency:** 19 kc ±2 cps. **FM Modulation:** Left channel (stereo), right channel (stereo), Phase test (left plus right channel in phase), Monophonic FM. **Deviation:** Adjustable to 75 kc. **Sweep rate:** (use for RF and IF alignment) 60 cps. **Sweep width:** (use for RF and IF alignment) Adjustable to 750 kc. **RF Attenuator range:** 60 db in 20 db steps. **Crystal-controlled markers:** 10.7, 90.95, 96.30, 101.65, & 107 mc. **Composite signal output:** Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). **Audio output:** 400, 1000, & 5000 cps; 19 kc (±2 cps), 38 kc; & SCA (65 or 67 kc). **Distortion:** (At 400, 1000 & 5000 cps) Less than 5%. **Front panel controls:** 19 kc pilot level control, deviation—sweep width-composite level-audio level control, function switch, frequency switch, & RF attenuator switches. **Rear panel adjustments:** Balance adjust, 38 kc sync, pilot level adjust, & SCA frequency switch. **Chassis adjustments:** Oscillator adjust, frequency adjust & modulation adjust. **Power requirements:** 105-125 volts AC, 50/60 cps, 35 watts. **Dimensions:** 10¼" H x 8" D x 13" W.



IG-112 **$99.00**

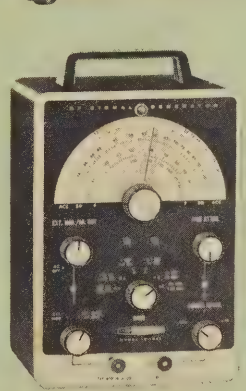
Heathkit RF Signal Generator . . . A Valuable Addition To Any Test Bench!

• Covers 100 kc to 220 mc in 6 bands • Large, accurately calibrated dial scales • Prewired, prealigned coil/bandswitch assembly • Modulated or unmodulated RF output • 400 cps signal for audio tests

Countless Applications In Radio & TV Service Work! Provides all essential generator facilities for fast, easy alignment of RF & IF circuits in AM tuners and receivers. Achieves 2% accuracy on all bands for pinpoint frequency settings. RF output controlled by both fixed-step & variable attenuators. Internal 400 cps signal with 10 volt output available separately for audio tests.

Kit IG-102, 6 lbs., no money dn., $5 mo. **$27.95**
Assembled IGW-102, 6 lbs., no money dn., $6 mo. **$54.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-102 SPECIFICATIONS—Frequency range: Band A, 100 kc to 320 kc; Band B, 310 kc to 1.1 mc; Band C, 1 mc to 3.2 mc; Band D, 3.1 mc to 11 mc; Band E, 10 mc to 32 mc; Band F, 32 mc to 110 mc. **Calibrated harmonics:** 110 mc to 220 mc. **Accuracy:** 2%. **Output:** Impedance, 50 ohms; Voltage, 100,000 uv. **Modulation:** Internal, 400 cps, 30% depth; External, approx. 3 V across 50 k ohms for 30%. **Audio output:** Approx. 10 V open circuit. **Power requirements:** 105-125 V 50/60 cycles AC, 15 watts. **Dimensions:** 6½" W x 9½" H x 5" D.



Kit IG-102 **$27.95**

Wired IGW-102 **$54.95**

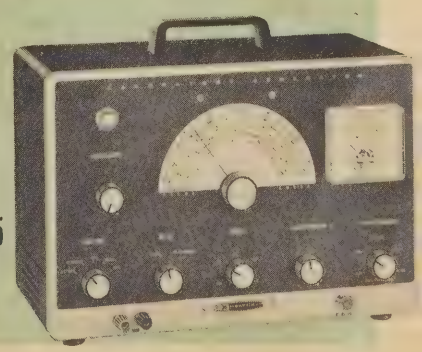
Laboratory RF Generator . . . Ideal For Design & Development Work!

• Metered output voltage and % modulation • Operates on fundamentals—100 kc to 30 mc in five bands • Double shielding of all oscillator circuits • Easy to build

Professional Quality Throughout! Ideal for stage gain measurements and RF alignment work. Features transformer operated power supply . . . generous filter design and voltage regulation for smooth plate voltage . . . 50 ohm generator output impedance . . . and variable modulation from 0 to 50% at 400 cycles internally, between 60 to 10,000 cps externally.

Kit IG-42, 15 lbs., no money dn., $6 mo. **$56.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-42 SPECIFICATIONS—Frequency ranges: Band A, 100 to 290 kc; Band B, 280 to 1000 kc; Band C, 0.95 to 3.1 mc; Band D, 2.9 to 9.5 mc; Band E, 9 to 31 mc. **RF output:** Impedance, 50 ohms—voltage, 100,000 microvolts max. **Attenuator:** 10:1 per step, 5 steps—Fine, 10:1 continuous, indicated on meter. **Amplitude modulation:** CW, internal 400 cycles or external audio frequencies. **Modulation depth:** 0 to 50% variable, indicated on meter. **Power requirements:** 105-125 V. 50/60 cycles. **Dimensions:** 13" W x 8½" H x 7" D.



IG-42 **$56.95**

Heathkit "Low-Ripple" Battery Eliminator . . . A "Must" For Servicing Mobile Equipment

• Convenient switch-selection of 6 or 12 volt DC power • Special ripple filter circuit holds AC ripple to less than .3% • Panel metered output voltage & current • Doubles as a convenient battery charger • Heavy-duty well-rated components throughout

Provides smooth 6 or 12 volt DC power for transistorized or hybrid radios.

Kit IP-12, 18 lbs., no money dn., $5 mo. **$47.50**
Assembled IPW-12, 17 lbs., no money dn., $6 mo. **$59.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IP-12 SPECIFICATIONS—Continuously variable output: 6 volt range: unfiltered, 10 amp continuous, 15 amp maximum; filtered, 5 amp continuous, less than .3% ripple. 12 volt range: unfiltered, 5 amp continuous, 7.5 amp maximum; filtered, 5 amp continuous, less than .3% ripple. **Power requirements:** 105-125 volts 50/60 cycles AC at 200 watts. **Dimensions:** 13" W x 8½" H x 7" D.



Kit IP-12 **$47.50**
Wired IPW-12 **$59.95**

Heathkit Variable-Voltage Regulated Power Supply

• Furnishes B+, Bias, & Filament voltages • DC output variable from 0 to 400 volts • Separate panel meters monitor output voltage & current • Output terminals isolated for safety in AC/DC work

Separate switching allows high voltages to be switched "off" while filaments remain "on".

Kit IP-32, 17 lbs., no money dn., $6 mo. **$56.95**
Assembled IPW-32, 18 lbs., no money dn., $9 mo. **$84.95**

IP-32 SPECIFICATIONS—Output: 0-400 volts regulated DC at 0-100 ma cont., 125 ma intermittent, 0 to -100 volts DC at 1 ma variable bias voltage, 6.3 volts AC at 4 amps., filament voltage. **Regulation:** Output variation less than 1% from no load to full load. Output variation less than 1% for a ± 10 v. change at 117 V. AC input. **Ripple:** Less than 10 millivolts RMS, ripple, jitter and noise. **Output impedance:** Less than 10 ohms, DC to 1 mc. **Meters:** Voltmeter 0-400 V or 0-150 V.; Milliammeter 0-150 ma. **Dimensions:** 13" W x 8½" H x 7" D.



Kit IP-32 **$56.95**
Wired IPW-32 **$84.95**

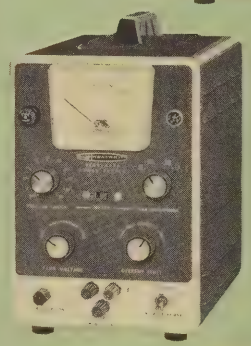
"Solid-State" Regulated DC Power Supply . . . 0.5 To 50 VDC @ Up To 1.5 Amperes With Less Than 150 Microvolts AC Ripple!

• All-transistor solid-state circuitry • Relay protected against short circuit & overload • Four current ranges, 50 MA, 150 MA, 500 MA & 1.5 A. • Adjustable current limiter, 30 to 100% on each range • Series type voltage regulator, zener diode reference

A Tremendous Value In A DC Supply! . . . Both current & voltage regulation.

Kit IP-20, 13 lbs., no money dn., $8 mo. **$72.95**
Assembled IPW-20, 16 lbs., no money dn., $11 mo. **$114.95**

IP-20 SPECIFICATIONS—Input: 105-125 volts 60 cps; 125 watts at full load (50V, 1.5A). **Output:** 0.5-50 volts DC; 1.5 amps max. DC. **Load regulation:** ± 15 millivolts, can be adjusted for no change. **Line regulation:** (105 to 125 VAC): Less than .005% change. **Ripple & noise:** Less than 150 microvolts. **Transient response:** Less than 25 microseconds. **Output impedance:** Less than .1 ohm DC to 10 kc; less than .5 ohms 10 kc & up. **Overload protection:** Current limiter & relay. **Meter:** 3½", 1 ma, 50 ohm. **Meter current ranges:** 50 ma, 150 ma, 500 ma, 1.5 amp. **Meter voltage ranges:** 5V, 15V, 50V. **Front panel controls:** On/Off, Coarse voltage switch, Fine voltage adjust, Current range switch, Current limit adjust, Meter slide switch, DC regulation, Reset Standby toggle switch. **Output terminals:** (3), plus (+), minus (—), chassis ground. **Dimensions:** 9½" H x 6½" W x 11" D.



Kit IP-20 **$72.95**
Wired IPW-20 **$114.95**

Heathkit Sine-Square Wave Generator

• Covers 20 cps to 1 mc in 5 bands . . . from bottom of audio band to half way through the broadcast band • Less than .25% sine wave distortion • Less than .15 microsecond square wave rise time • Sine and square wave output available simultaneously

A Dependable Instrument For HI-Fi And General Audio Testing.

Kit IG-82, 14 lbs., no money dn., $6 mo. **$51.95**
Assembled model EUW-27, pg. 34, 14 lbs., no money dn., $10 mo. **$94.00**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-82 SPECIFICATIONS—SINE WAVE: Frequency range: 20 cycles to 1 mc. **Output volts (RMS):** 0 to 10 volts, 0 to 1 volt, 0 to .1 volt, or 0 to .01 volt when working into a high impedance load. **Source impedance:** (±10%): 10 volt range, 0 to 3.5 k ohm; 1V, .1V and .01V range, 600 ohm. **Distortion:** Less than .25%, 20 to 20,000 cycles. **Frequency response:** ±1.5 db 20 cycles to 1 megacycle. **SQUARE WAVE: Frequency range:** 20 cycles to 1 mc. **Output volts:** (P. to P.) ±5%; 0 to 10 volt, 0 to 1 volt, 0 to .1 volt, into a high impedance load. **Source impedance:** (±10%): 10 volt range, 0 to 220 ohm; 1V and .1V ranges, 52 ohm. **Rise time:** less than .15 microsecond. **GENERAL:** Frequency accuracy; ±5%. **Power requirements:** 105-125V AC, 50/60 cycles, 55 watts. **Dimensions:** 13" W. x 8½" H. x 7" D.



Kit IG-82 **$51.95**
Wired (as model EUW-27) **$94.00**

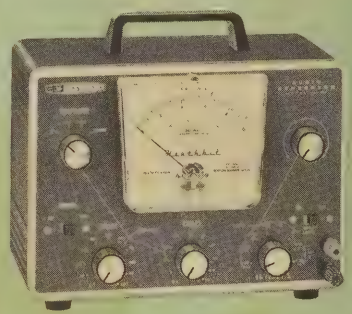
Heathkit Switch-Selected Audio Frequency Generator Produces Near-Perfect Sine Wave Signals

• Switch-selected output frequencies—10 cps to 100 kc • Less than 0.1 of 1% distortion—20 to 20,000 cps • Panel metered output is calibrated in volts & db • Output level and frequency accurate to within ±5%

Metered Output Voltage Enables Accurate Hi-Fi Circuit Analysis.

Kit IG-72, 8 lbs., no money dn., $5 mo. **$41.95**
Assembled IGW-72, 9 lbs., no money dn., $7 mo. **$64.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IG-72 SPECIFICATIONS—Frequency: 10 cps to 100 kc, switch selected, 2 significant figures and multiplier. **Output:** 6 ranges 0 to .003, .01, .03, .1, .3, 1 volt RMS into external 600 ohm load or with internal load into Hi-Z, 2 ranges 0 to 3, 10 volts RMS into a minimum of 10,000 ohms, —60 db to +22 db in 8 steps, —60 dbm to +2 dbm (0 dbm=1 mw into 600 ohms). **Distortion:** less than .1%, 20 to 20,000 cps. **Tubes:** (1) 6AU6, (1) 6CL6, (1) 6X4. **Power:** 105-125 volts AC, 50/60 cycles, 40 watts. **Dimensions:** 9½" W x 6½" H x 5" D.



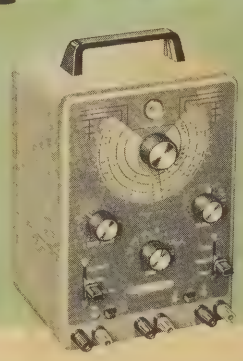
Kit IG-72 **$41.95**
Wired IGW-72 **$64.95**

Heathkit Capacitor Checker

• Tests all capacitor types • Low bridge voltage for safe testing of miniature electrolytics • 16 leakage testing voltages • Direct reading scales—no involved calculations • Measures resistance from 5 ohms to 50 megohms • Measures capacitance from 10 uuf to 1,000 mfd • Comparator circuit—measures "L", "C", or "R" with external standard • Calibrated power factor control • "Eye" tube null & leakage indicator

Kit IT-11, 7 lbs., no money dn., $5 mo. **$29.95**
Assembled ITW-11, 9 lbs., no money dn., $5 mo. **$49.95**
Export model available for 115/230 VAC, 50-60 cps; write for prices.

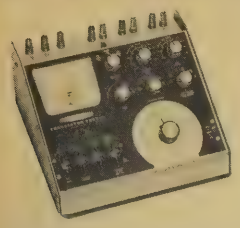
IT-11 SPECIFICATIONS—Test circuit: AC bridge, powered through special bridge transformer by an internal 60 cycle supply or by an external audio generator with 10 volts output. Upper frequency limit: 10 kc. **Capacitance, 4 ranges:** 10 uuf to .005 ufd; .001 ufd to .5 ufd; .1 ufd to 50 ufd; 20 ufd to 1000 ufd. **Capacitor leakage:** DC test voltages from 3 to 600 volts in 16 steps. **Resistance, 3 ranges:** 5 ohms to 5000 ohms; 500 ohms to 500 K ohms; 50 K ohms to 50 megohms. **Comparator circuit:** External standard R, L or C; Max. Ratio 25-1. **Power supply:** Transformer-operated, half-wave rectifier. **Power requirements:** 105-125 volts AC, 50/60 cycles, 30 watts. **Dimensions:** 9½" high x 6½" wide x 5" deep.



Kit IT-11 **$29.95**
Wired ITW-11 **$49.95**

In Test Instruments

HEATHKIT



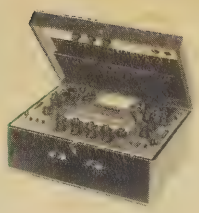
Now Available Kit or Assembled . . . Heathkit Laboratory Transistor Tester

IM-30 $54.88

• Provides complete DC analysis of PNP & NPN transistors • Provisions for checking high voltage & high current transistors through external supplies

Kit IM-30, 9 lbs., no money dn., $6 mo. $54.88
Assembled IMW-30, 10 lbs., no money dn., $9 mo. $84.95

IM-30 SPECIFICATIONS—Checks: Transistors up to 15 amps and diodes up to 1.5 amps. **Tests:** Shorts, DC Gain (Beta 0-300) (Alpha 0-.9967), Leakage (Icbo, Iceo), Diode Forward & Reverse Current. **Power supply:** Internal, seven 1.5 volt size D batteries provide 1.5, 3, 4.5, 6, 7.5, 9 volts collector supply for gain or leakage and 1.5 volts for bias; external, 0-50 volts for gain, 0-150 volts for leakage and 0-5 volts for bias. **Bias control:** Permits any collector current from 10 ua to 15 amps for gain tests. **Gain control:** 3% wire-wound potentiometer has calibrated scales to give DC Beta and DC Alpha directly when meter is at null. **Transistor & diode connections:** Universal transistor socket and binding posts.



Heathkit Mutual-Conductance Tube Tester

TT-1A $149.95

• No finer tube tester in kit form anywhere! • Indicates Gm to 24,000 micromhos • Ultra-sensitive grid current test • Built-in calibration circuit for high accuracy

Kit TT-1A, 33 lbs. . . no money dn., $14 mo. $149.95

TT-1A SPECIFICATIONS—Power requirements: Voltage: 105-125, 60 cycle AC. Watts: 10-60. **Testing circuits:** Gm; mutual conductance for amplifiers, 0-24,000 micromhos. Emission: rectifiers & diodes. Leakage: direct reading ohmmeter. Grid current: ¼ microampere sensitivity. Voltage regulator: firing voltage and regulation tolerance. Low power thyratron: grid characteristics, conduction capabilities. Eye tubes: control grid characteristics. **Line voltage adjustment:** Continuously variable. **Roll chart mechanism:** Constant tension, illuminated. **Dimensions:** Cabinet (outside): 17¾'' W x 13½'' H x 8'' D. Panel & chassis: 17'' W x 12¾'' H x 5½'' D.



Heathkit Tube Checker

IT-21 $44.95

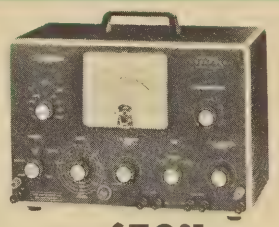
• Tests standard types plus Compactrons, Nuvistors, Novars, and 10-pin miniatures • Multi-colored "bad-?-good" meter scale • Lighted meter • Constant tension roll chart • Easy assembly

Kit IT-21, 12 lbs., no money dn., $5 mo. $44.95

IT-21 SPECIFICATIONS—Tests: Emission, short, leakage, open element, filament continuity. **Sockets:** 4-pin, 5-pin, 6-pin, 7-pin combination and pilot light, 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. **Meter:** 1 ma, BAD-?-GOOD scale, illuminated. **Line voltage adjustment:** Step type. **Roll chart mechanism:** Constant tension, illuminated. **Power requirements:** 105-125 VAC, 50/60 cps. **Dimensions:** 5½'' x 8½'' x 13''.

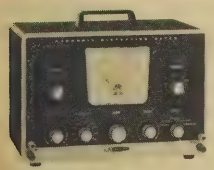
Heathkit Audio Analyzer

• Combines the functions of 3 separate instruments — AC VTVM, Wattmeter & Intermodulation Analyzer • Built-in high & low frequency sources for IM tests (60 cps & 6 kc) • Built-in load resistors for 4, 8, 16 & 600 ohms • Meter calibrated in VAC, Watts (.15 mw to 150 w), db from —65 to + 52 dbm



IM-22 $56.95

Kit IM-22, 13 lbs., no money dn., $6 mo. $56.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.



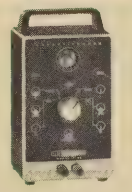
Heathkit Harmonic Distortion Meter

IM-12 $54.95

• Measures harmonic distortion from 20 to 20,000 cps • Distortion is read direct—volts RMS, % distortion, & db • Measures noise levels down to —60 dbm

Kit IM-12, 13 lbs., no money dn., $6 mo. $54.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IM-12 SPECIFICATIONS—Frequency: 20-20,000 cps. **Distortion:** 1 to 100% full scale, 5 ranges. **Voltmeter:** 1, 3, 10, 30 volts full scale. **Minimum input:** 0.3 volts. **Input resistance:** 300k ohm. **Accuracy:** Voltmeter & distortion ±5% full scale. **Power requirements:** 105-125V. 50/60 cps. AC, 30 watts. **Dimensions:** 13'' W x 8½'' H x 7'' D.



Heathkit "In-Circuit" Capaci-Tester

IT-22 $10.95

• Spots open, shorted, or intermittent capacitors without removing them from the circuit • Fast & simple to use • Built-in self test

Kit IT-22, 4 lbs. $10.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

IT-22 SPECIFICATIONS—Range: Open Test, 50 uufd to infinity, shunted by more than 2 K ohms at 50 uufd, 400 ohms at 100 uufd, 30 ohms at 350 uufd or more. Short test, up to 20 ufd shunted by at least 10 ohms. **Test frequencies:** Short test, 60 cycles. Open test, 19 mc. **Power requirements:** 105-125 V, 50-60 cycles AC, 5 watts. **Cabinet size:** 7⅜'' H x 4-11/16'' W x 4⅛'' D.

Heathkit Visual-Aural Signal Tracer

• Traces RF, IF and audio signals • Quickly locates defective stage in circuit under test • Single, convenient audio-RF probe with switch • Doubles as a test-bench utility amplifier/speaker



IT-12 $19.95

Kit IT-12, 6 lbs. $19.95
Export model available for 115/230 VAC, 50-60 cps; write for prices.

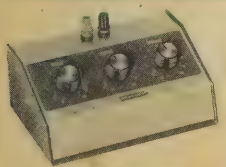


IT-10 $6.95

Heathkit Transistor-Diode Checker

• Checks for leakage, short, open, and tests for current gain • Checks diode forward and reverse current • Operates on two standard size "C" flashlight batteries • Quick to assemble

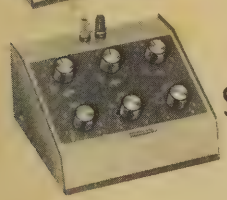
Kit IT-10, 2 lbs. $6.95



IN-21 $17.95

Heathkit Decade Boxes

3-Decade Condenser Kit . . . provides switch-selected capacitance values from 100 uuf to 0.111 uf in 100 uuf steps and ±1% accuracy. Cabinet—7⅛" W x 4" H x 5" D.
Kit IN-21, 3 lbs. $17.95



IN-11 $24.95

6-Decade Resistance Kit . . . for ½% accurate resistance values from 1 to 999,999 ohms in one ohm steps. 1-watt resistors. Dimensions: 7½" W x 5" H x 6⅝" D.
Kit IN-11, 3 lbs., no money dn., $5 mo. $24.95



IN-12 $5.95

Heathkit Component Substitution Boxes

Resistance Substitution Box Kit . . . switch selects any one of 36 E.I.A. standard 10% 1-watt resistors ranging from 15 ohms to 10 megohms. Case 5⅜" L x 3⅛" W x 3" H.
Kit IN-12, 2 lbs. $5.95



IN-22 $5.50

Condenser Substitution Box Kit . . . selects any one of 18 common E.I.A. standard capacitor values ranging from 0.0001 uf to 0.22 uf. 400 v. minimum. Case 5⅜" L x 3⅛" W x 3" H.
Kit IN-22, 2 lbs. $5.50

HEATH COMPANY
Benton Harbor, Michigan 49022

THIRD CLASS

CATALOG
POSTMASTER—IF UNDELIVERABLE
PLEASE DO NOT RETURN

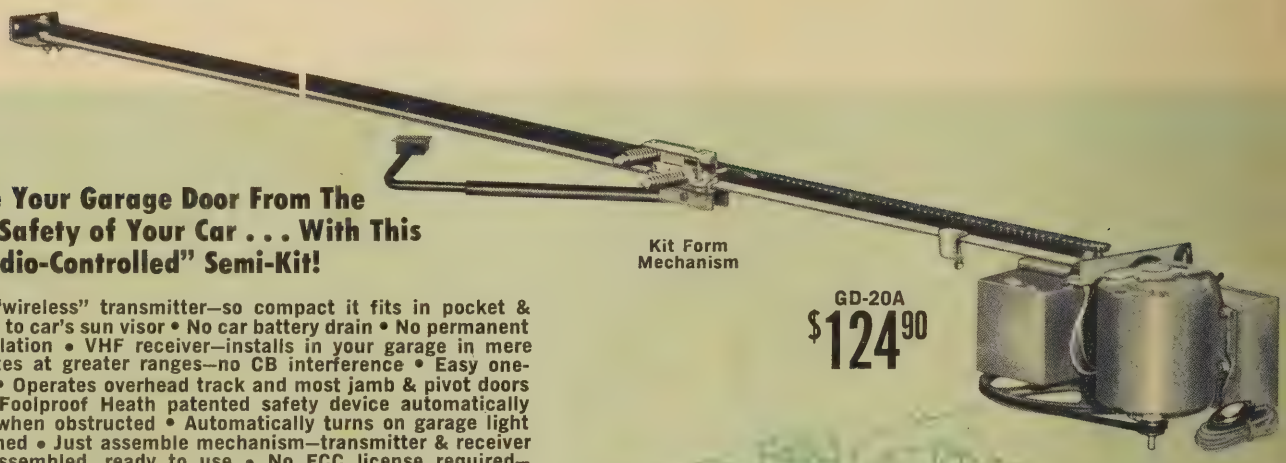
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Job Opportunities
ENGINEERS & TECHNICIANS

Due to expansion, we now have job openings in our Service and Engineering departments for technicians and engineers. We offer good salaries, liberal employee benefits, and a pleasant working atmosphere in our modern plant located on the eastern shore of Lake Michigan. Excellent school, shopping and recreational facilities. You'll live within minutes of work. If interested, write to:

W. F. Donahue
Director of Personnel
Heath Company
Benton Harbor, Michigan 49022

All prices quoted are Net F.O.B. Benton Harbor, Michigan and apply to United States and Possessions only.
Prices and Special Offers herein effective March 1, 1966.
All prices and specifications subject to change without notice.
Dealers and export prices slightly higher.



Kit Form Mechanism

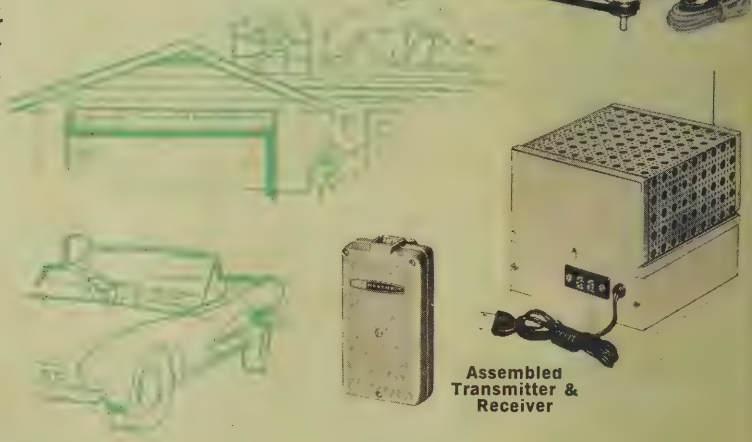
GD-20A
$124.90

Open & Close Your Garage Door From The Comfort and Safety of Your Car . . . With This Heathkit "Radio-Controlled" Semi-Kit!

• VHF portable "wireless" transmitter—so compact it fits in pocket & purse, or attaches to car's sun visor • No car battery drain • No permanent under-hood installation • VHF receiver—installs in your garage in mere minutes • Operates at greater ranges—no CB interference • Easy one-man installation • Operates overhead track and most jamb & pivot doors up to 8' high • Foolproof Heath patented safety device automatically disengages door when obstructed • Automatically turns on garage light when door is opened • Just assemble mechanism—transmitter & receiver are completely assembled, ready to use • No FCC license required—complies with FCC regulations • Operates well within new FCC radiation limits . . . won't interfere with aircraft radio frequencies • 2 year warranty on receiver & transmitter

Especially Convenient in Bad Weather Or Late At Night . . . especially convenient for Mom or elder members of your household! Just a touch of the button on the "wireless" transmitter as you pull into your driveway, and your garage door opens and the light goes on. Another touch of the button once you're safely inside and the door closes automatically. A time delay on the mechanism-operated light allows plenty of time to enter the house or turn on the main lights.

Won't Interfere With Similar Neighborhood Units . . . Easy To Use From Car To Car! Simply clip the pocket-size transmitter to sun visor, or store in glove compartment. And since it's wireless, there's no complicated mounting under the hood or dash. A self-contained battery eliminates car battery drain. You build only the mechanism . . . transmitter & receiver are preassembled. Automatic light feature may be extended to control driveway or patio lights.



Assembled Transmitter & Receiver

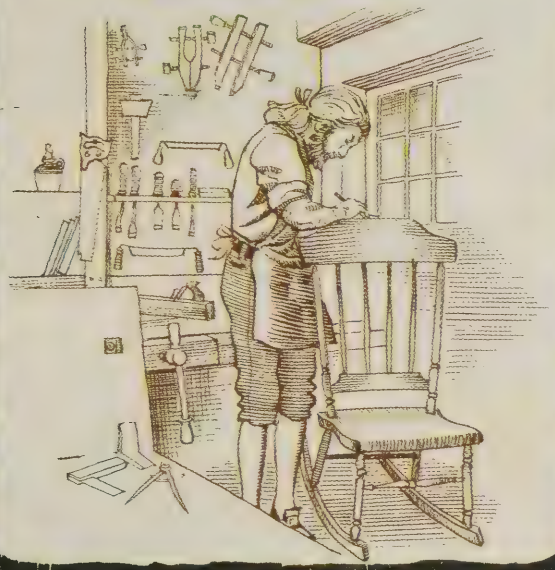
GD-20A, 69 lbs. . . . mechanism, (1) transmitter, (1) receiver . . . no money down, $12 mo. **$124.90**
GD-20B, 69 lbs. . . mechanism, (2) transmitters, (1) receiver. . . no money down, $14 mo. **$144.90**
Kit GDA-20-3 Heathkit mechanism, 61 lbs. no money dn., $7 mo. . . **$69.95**
GDA-20-4, (1) Transmitter, (1) Receiver. . . 8 lbs. . . no money dn., $6 mo. **$54.95**
GDA-20-5, (2) Transmitters, (1) Receiver. . . 8 lbs. . . no money dn., $8 mo. **$74.95**

KIT MECHANISM SPECIFICATIONS—125'' long x 8⅝'' high x 13'' wide. 100# max. operating force. Operates overhead track and most jamb & pivot doors up to 8' high. 117 V. AC. ¼ H.P. motor. Fused.
VHF TRANSMITTER SPECIFICATIONS—Powered by two Eveready #E-91 alkaline batteries. Uses one of six modulation frequencies approx. 16 kc, 18 kc, 20 kc, 22 kc, 24 kc, 26 kc. CK 5676 RF osc. tube, 2N270 audio osc. transistor. 5½'' H x 3'' W x 1⅜'' D.
VHF RECEIVER SPECIFICATIONS—117 VAC, 10 watts. 6AB4 RF amplifier, 12AT7 detector-amplifier, 12AT7 amplifier-rectifier, 5696 relay control. RF frequencies approx. 225 mc, 230 mc, 235 mc, 250 mc, 255 mc, 290 mc, 295 mc. 5¾'' H x 6'' W x 6½'' D.

HEATHKIT®



The Pioneer Spirit made America Great. Self-reliance, independence, individual participation. You get a taste of that spirit when you build a Heathkit product. Declare your independence, now.



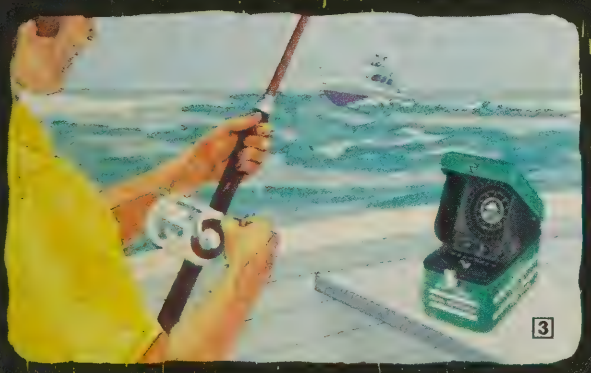


SPRING 1976











1 NEW — R/C Glider

2 NEW — CRT Tester/ Rejuvenator

3 Deluxe Fish Spotter/ Depth Sounder

4 NEW — Precision Power Supply

5 NEW — Digital Miles-per-Gallon Monitor/ Speedometer

6 Handheld 2-Meter Transceiver

7 Programmable Stopwatch

PLUS... over 400 other electronic kits you can build and service yourself

© 1976 Heath Company
See index on page 3

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A new standard for versatility & value— Heathkit Digital Stopwatch—

$99.95

Used by coaches and timers of the United States International Skating Association.



Shown Actual Size

Rally Modification

In just a few minutes you can easily convert your GB-1201 into a six-digit stopwatch with readout in hours, minutes and *hundredths of minutes*—perfect for rallies and time studies!

Instructions are included in all new kits. If you already own a GB-1201, send a stamped, self-addressed envelope to: Technical Consultants, Heath Company, Benton Harbor, Michigan 49022.

A removable sunshield makes the GB-1201 easy to read even in sunlight.

Includes an AC adapter/charger, rechargeable batteries and lanyard.

Jacks let you start & stop the GB-1201 electronically by remote control.

7 functions, 8 digits, 1/100th of a second resolution & typical accuracy to ±0.003%!

All the range and accuracy you'll probably ever need — from just 1/100th of a second all the way up to 99 hours, 59 minutes, 59.99 seconds, with quartz-crystal precision. Two exclusive, Heath-designed PMOS IC counters give it versatility never before achieved. Its wide range of functions makes it ideal for almost any timing job — from navigating an airplane to timing a race. And you'll find dozens of every day uses for each function.

Function 1 — Start/Stop Elapsed Time — times any number of individual events while also counting total elapsed time from beginning of first event to the end of the last. Like two stopwatches in one — times two participants in the same event. Ideal for races.

Function 2—Sequential—times and displays each part of an event (i.e., each lap) while also timing overall event. Compare lap times of any participants while still timing overall event. Ideal for multilap races, navigation.

Function 3 — Total Activity Time — accumulates elapsed time for series of events. Also maintains separate count of total elapsed time including down time or breaks. Perfect for auto or plane trips, efficiency studies.

Function 4 — Split — displays cumulative time to each "split" point while continuing to time overall event. Useful in ski races, swim meets, sailboat race committees, etc.

Function 5 — Start/Stop Activity Time — shows separate times for each event or "leg", then totals all individual times. Great for trips, races, rallies.

Function 6—Upcount—counts to programmed or "learned" time then sends a trigger pulse to the alarm jack. Same number can be used repeatedly without reprogramming and count can be interrupted and resumed at any point. Perfect for tests, officiating, etc.

Function 7 — Downcount — counts from programmed number to zero, then sends trigger pulse to alarm jack. Count can be interrupted and resumed at any point. Ideal for yacht races, testing, officiating and helps athletes pace themselves in training.

Functions 6 and 7 are unique. The stopwatch can "learn" a time in one of the other functions, then transfer it to Function 6 or 7. Or program any time up to 9 hours, 59 minutes, 59 seconds using a clever digit-set method.

Start/stop jacks for photoelectric and relay circuits. Display switch turns the readouts off in functions 1-5 to conserve batteries and, in functions 2 and 4, switching off, then on, "unlatches" display to show counting process. After an event is finished, pressing the start/stop button alternately displays time in each counter. High-impact plastic case.

With care, even a novice kitbuilder can assemble the GB-1201 in two evenings or less. And in the value-conscious Heath tradition, its price is about half that of much less versatile electronic stopwatches.

Kit GB-1201, Shpg. wt. 3 lbs. **99.95**

ICA-2009-1, Felt-lined Naugahyde® carrying case, Shpg. wt. 1 lb. **3.95**

GB-1201 SPECIFICATIONS

Accuracy: ±0.006%, typically better than 0.003%. Instrument alignment provides higher accuracy. **Battery Life:** approx. 40 hrs. between charges with displays most off; approx. 4 hrs. with displays continuously on. **Recharging:** approx. 14 hours with power off. **Temperature Range:** −10° to +120°F. **Dimensions:** 5⅓″ H x 2¹⁄₁₆″ W x 2″ D. **Net Weight:** approx. 8 oz.

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit Telephone Amplifiers for convenient "hands free" conversations





Great for business and family "conference" calls

These two fine telephone amplifiers make phone calls easier, more convenient than ever. And you can select one with or without a built-in dialer. In performance, features and value, they equal the best telephone amplifiers you can buy or rent.

To answer the phone, just press the Power button; to hang up, press it again. Voice-activated circuitry instantly and silently switches the GD-1112 and GD-1162 from talk to listen—without "clipping" words. An easy-to-use slide control adjusts the listening volume. Pressing the Listen button disables the built-in microphone, but still lets you monitor the line. That makes it a perfect "hold" button and more. When you talk through the handset of an external phone, pressing the Listen button allows others in the room to hear both sides of the conversation. To return your phone to normal operation, just turn the amplifier off.

The GD-1112 requires an external phone to place calls while the GD-1162's built-in dial and electronic ringer let you use it with or without a regular telephone. Compact plastic case looks beautiful whether it's hung on a wall or placed on a desk.

And you can build either model in just a couple of evenings. The GD-1162's dial mechanism comes completely preassembled. The manual includes detailed information on installation. Requirements and rates vary, so check with your local phone company for details.

Kit GD-1112, Amplifier, Shpg. wt. 4 lbs., **49.95**

Kit GD-1162, Amplifier with dialer, Shpg. wt. 5 lbs. **69.95**

Kit GRA-43-1, AC converter, Shpg. wt. 1 lb. **4.95**

GD-1112/1162 Specifications

Microphone Range: up to 10 ft. Power Requirement: 9-volt battery or GRA-43-1 (not included). Battery Life: approx. 700 three minute calls. Ringer: GD-1162 only; may be disconnected for party line use. Connectors Supplied: GD-1112, ¼" phone plug and 4-pin telephone plug; GD-1162, 4-pin telephone plug and 15-pin dataphone connector. Recommended Couplers: QKT coupler for GD-1112; STC coupler for GD-1162. Cable: 6', 4-conductor. Dimensions: 2½" H x 8½" W x 5¾" D. Net Weight: 2 lbs.

Note: Customer-owned equipment connected to telephone company lines may be subject to local tariff.

See pages 48-51 for ordering information

handy index

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Heathkit do-it-yourself radios keep

AM/FM Digital Electronic Alarm Clock-Radio

Here's everything you could want in a quality clock-radio...at an affordable kit price. And the GR-1075 is truly unique...the only product of its kind.

Setting the pace for convenience in the GR-1075 is the all-electronic digital clock. It reads out the time in conventional 12-hour format with bright orange 7-segment Beckman planar gas discharge tubes. Displays AM or PM, too.

A lighted decimal pulsates to indicate seconds and also shows that the alarm is properly set. Readout features automatic brightness control.

The GR-1075's 24-hour alarm cycle offers convenience you just won't find on conventional alarm clocks. Go to bed at 9 and set the alarm for 10, without being awakened in an hour. The alarm can be set to wake you with a gentle pulsating, electronic "beep" (which can be changed in volume by the radio volume control)...or by the soft music from the FM or AM radio station of your choice. The 7-minute snooze cycle feature is repeatable for up to an hour.

Two 9-volt batteries (not supplied) take over during power interruptions and keep the clock counting, without the display — when power is restored the clock is "on time" and the alarm will go off at the set time.

On the front panel are finger-flip switches for on/off; AM/FM selection; radio or electronic alarm; "wake-up" alarm set; 'Snooze" cycle; plus volume and AM/FM tuning controls.

Black plastic cabinet with simulated brushed aluminum front panel trim strip, and simulated walnut-grain vinyl end panels.

Kit GR-1075, Shpg. wt. 10 lbs. **129.95**

GR-1075 SPECIFICATIONS

FM: Tuning Range: 87.5 MHz - 108.5 MHz. **IF:** 10.7 MHz. **Sensitivity:** 5 μV @ 30 dB quieting. **AM: Tuning Range:** 525 kHz - 1650 kHz. **IF:** 455 kHz. **Sensitivity:** 300 μV/M @ 20 dB quieting. **GENERAL:** Dial: 4½" backlighted neon arc orange; 4" pointer travel. **AUDIO: Output:** 1 watt. **Speaker:** 3" x 5" oval, 40 ohm. **Power input:** 120/240 VAC, 50/60 Hz; 17 watts max.; clock, 7 watts. **Dimensions:** 4¼" H x 13⅜" W x 8⅛" D.

Budget-Priced, Solid-State AM/FM Table Radio



Your search for a good value in table radios should start right here...in fact, the GR-48 is a great radio to get you started in kit building, too.

You'll have the obvious enjoyment of both AM and FM listening, plus a list of features to assure you of quality radio entertainment. An Automatic Frequency Control eliminates signal drifting and keeps your GR-48 tuned to the station you select. The Automatic Gain Control maintains the AM volume level you select. Built-in AM and FM antennas and an easy-to-read, backlighted tuning dial round out the GR-48's feature package. 5¼" H x 10" W x 4⅞" D.

Kit GR-48, Shpg. wt. 5 lbs. **43.95**

The Heathkit AM/FM Table Radio with Component Quality Performance

The entertaining GR-1085 puts top performance and sophisticated system-type circuitry into a unitary table radio package...to deliver a roomful of clean, clear monophonic sound of the quality you expect from a high fidelity system. A sensitive tuner, ceramic filters and separate tone controls, assure you of a clean, tailored sound from your favorite station. A simplified circuit design makes the GR-1085 a joy to build, with only minimal adjustments. Luxurious cabinet covered with simulated teak-grained vinyl.

Kit GR-1085, Shpg. wt. 19 lbs. **99.95**

POWER OUTPUT: 5 WATTS, MINIMUM RMS, INTO 8 OHMS AT LESS THAN 1.0% TOTAL HARMONIC DISTORTION FROM 60 HZ to 15 KHZ.

GR-1085 SPECIFICATIONS

AM: Sensitivity: 300 μV/M for 20 dB S+N/N. Selectivity: 40 dB alternate channel. Hum & Noise: 30 dB below 1 watt. FM: Sensitivity: 5 μV. Selectivity: 60 dB. Hum & Noise: 50 dB below 1 watt. GENERAL: Power Requirement: 120/240 VAC, 50/60 Hz, 25 watts. Speaker: 4½", 8 Ohm. Dimensions: 7" H x 13" W x 7½" D.



you entertained at home or on the go

Heathkit Solid-State AM/FM Portable Radio $46.95



Taking your own entertainment with you has never been easier than with the GR-17 Portable Radio. It's a great kit to build...just right for someone starting out because of its clean, open circuit design. And because we've packed so many quality features into the GR-17, it delivers the kind of listening enjoyment you just won't find in some other portables. The Automatic Gain Control keeps the AM volume level where you set it. And the Automatic Frequency Control locks onto the FM station you select.

The GR-17 is powered by six "D" cell batteries (not included) to give you hours of on-the-go entertainment. An optional AC converter lets you plug the GR-17 into any standard AC outlet. 6¾" H x 8¾" W x 4" D.

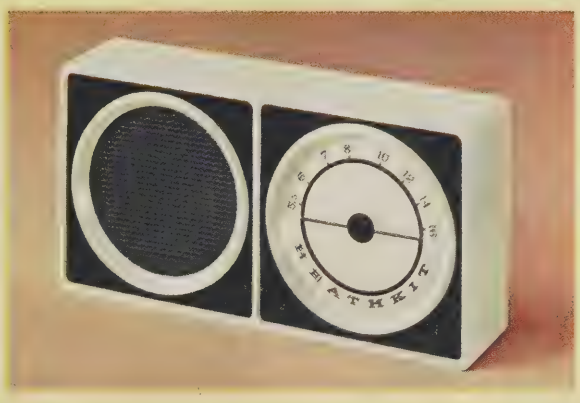
Kit GR-17, Shpg. wt. 6 lbs. **46.95**

GRA-43-1, Converter/Charger, 1 lb. . . . **4.95**

Solid-State AM Portable Radio anyone can build $15.95

A great kit for beginners. Goes together in a couple of evenings, and sings up a storm with big 3½" speaker & RF amplifier stage — unusual at this low kit price. Has AGC for constant volume, fixed ceramic filters for easy alignment. White & black plastic case measures a compact 4" H x 7⅞" W x 2" D. Operates on 9-V battery (not supplied). Get a youngster started in kit-building with this fun-to-build personal portable.

Kit GR-1008, 2 lbs. **15.95**

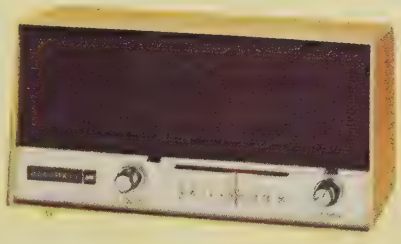




Solid-State AM Portable $32.95

Make this quality portable your constant companion when you're on the go. Attention to design detail will assure you of years of listening enjoyment. GR-24 operates on six "D" cell batteries (not included). Brown vinyl-coated fibreboard case. Anodized aluminum grill. 7" H x 8¾" W x 3¾" D.

Kit GR-24, Shpg. wt. 5 lbs. **32.95**



Solid-State AM Table Radio $26.95

The GR-28 is an ideal radio to start a kit-building career. Low kit-form price combined with all solid-state circuitry. Wide open design and simple step-by-step instructions make the GR-28 a joy to build. Gold plastic cabinet with brown grill. 5¼" H x 10" W x 4⅞" D. For 120 VAC.

Kit GR-28, Shpg. wt. 5 lbs. **26.95**



Declare Your Independence

Heath helps you make

[1] Versatile, five-function weather station

Get yourself into the spirit of the new year with this elegant, informative weather monitor for your home. The Heathkit ID-1290 Weather Station monitors indoor and outdoor temperatures, barometric pressure, wind speed and direction — all with electronic accuracy and reliability. Uni/Mag barometer lets you observe changes as small as 0.02 inches of mercury. The thermometer is calibrated in two degree increments from —40 to +120° F and a switch selects indoor or outdoor readings. The windspeed indicator has two ranges — 0-30 mph or 0-90 mph and 8 wind direction lights offer true 16-point resolution.

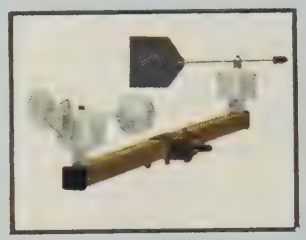
ID-1290's walnut-grained plastic cabinet can be hung vertically or horizontally; or use as a desk set with the stands included with the kit. The remote transmitter assembly (windcups, weather vane and outdoor temperature sensor) clamps onto any TV antenna mast and is connected to the plaque with optional 8-wire cable (below). Includes comprehensive weather book.

Kit ID-1290, Shpg. wt. 8 lbs. **89.95**

IDA-1290-1, 50 ft. cable, Shpg. wt. 2 lbs. **7.50**

IDA-1290-2, 100 ft. cable, Shpg. wt. 4 lbs. **13.50**

IDA-1290-3, 150 ft. cable, Shpg. wt. 5 lbs. **18.50**



The remote transmitter assembly for the ID-1290 and ID-1590 clamps easily to any TV antenna mast.

[1] Five-Function Weather Station



Digital Electronic Wind Speed and Direction Indicator

The Heathkit ID-1590 takes the guesswork out of knowing the wind speed and direction. Its outstanding accuracy and easy-to-read digital display makes this kit a "must" for pilots, boaters — anyone whose activities are affected by the wind. During construction, you pick the two readout modes you need from three available modes: miles, knots or kilometers per hour. Switches select mode and front-panel lights show which mode is in use. Incandescent bulbs mark the 8 principal compass points. Two adjacent bulbs can light simultaneously, providing 16-point resolution. The transmitter boom clamps onto any 1 to 1½" rooftop TV antenna mast and is connected to the receiver with optional cable. The rugged Cycolac® plastic case with teak-grain vinyl insert matches our GC-1094 Digital Clock and ID-1390 Digital Thermometer.

Kit ID-1590, Shpg. wt. 6 lbs. **69.95**

IDA-1290-1, 50 ft. cable, Shpg. wt. 2 lbs. **7.50**

IDA-1290-2, 100 ft. cable, Shpg. wt. 4 lbs. **13.50**

IDA-1290-3, 150 ft. cable, Shpg. wt. 5 lbs. **18.50**

ID-1590 SPECIFICATIONS

Wind Speed: 0-99 in miles per hour, knots or kilometers per hour (choice of two). **Response Threshold:** 3 mph. **Accuracy:** ±1 digit or ±10%, whichever is greater. **Direction Response Threshold:** approx. 2 mph. **Operating Temperature:** Remote transmitter, —40 to +120°F; Receiver, 0 to +150°F. **Power Requirement:** 120 VAC, 50/60 Hz, 6.5 watts. **Dimensions:** Receiver, 2½" H x 7" W x 5" D; Remote transmitter, 30" boom.

it easy to keep tabs on time and weather

HEATH charg-a-kit REVOLVING CHARGE



Digital Electronic Indoor/ Outdoor Thermometer

You'll never have to "gauge-guess" again when it comes to reading a thermometer. The ID-1390 monitors indoor/outdoor (or any two temperatures) with big, bright, easy-to-read digital readout. Switches select either Fahrenheit or Celsius readings and let you choose continuous readings of one temperature or alternate readings of both. The 85′ of cable included with the sensors permits a variety of custom applications — home freezer, hot house, garage, basement, pump house, swimming pool, aquarium, almost any temperature. Black Cycolac® plastic case with teak-grain vinyl inserts matches the GC-1094 digital clock and ID-1590 digital wind speed/direction monitor.

Kit ID-1390, Shpg. wt. 5 lbs. **59.95**

ID-1390 SPECIFICATIONS

Temperature Range: Fahrenheit −40 to +120°; Celsius, −40 to +50°. Accuracy: Celsius, ±1°C from −15° to +50°C, ±2°C from −30° to −15°C. Fahrenheit, ±1°F from +20° to +120°F, ±2° from −30° to +20°F. Power Requirement: 110-130 VAC, 60 Hz, 4 to 6 watts approx. Dimensions: 2½″ H x 7″ W x 5″ D.



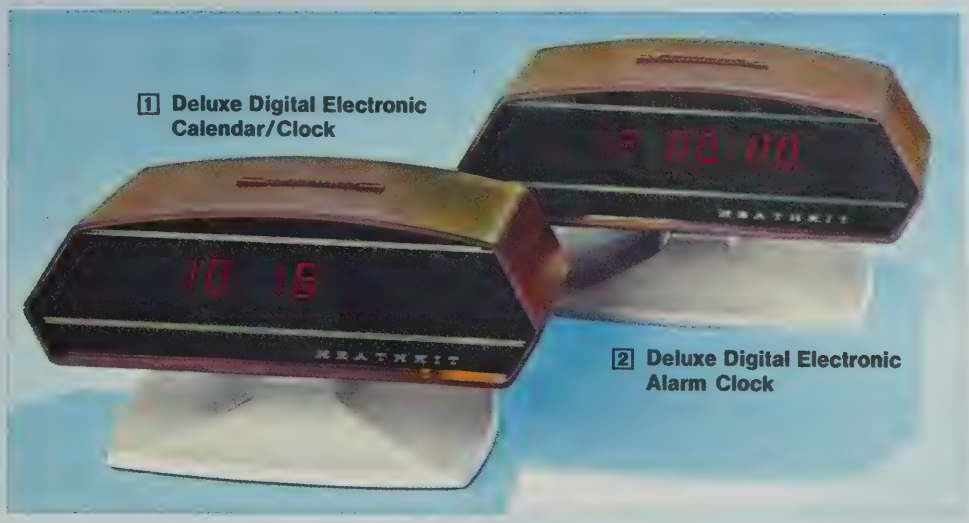
Budget-Priced Digital Electronic Clock

The GC-1094 makes waking up a little easier with a gentle electronic "beep." Take additional 7-minute catnaps, up to an hour. Should the power be interrupted for more than a few seconds, the display shows all "eights" until the clock is reset. An easy kit to build — most parts mount on two circuit boards. Can be wired for 12 or 24-hour readout.

Kit GC-1094, Shpg. wt. 4 lbs. **49.95**

GC-1094 SPECIFICATIONS

Accuracy: determined by line frequency. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 2½″ H x 7″ W x 4¾″ D.



1 Deluxe Digital Electronic Calendar/Clock

It won't take long for you to see that the GC-1092D is truly a quality digital timepiece. It not only brings you the time in hours, minutes and seconds in bright orange ½″-high 7-segment Beckman planar gas discharge tube digits — it also, automatically or at a touch, brings you the date in four digits for the month and day. Displays time continuously, or automatically displays the date two seconds out of every ten. Or, simply touch the case-top control to call up the date display for approximately five seconds any time you want it. 12 or 24 hour time format.

Stand-by battery supply takes over instantly in case of a power interruption. It also features automatic control of display brightness — bright in brightly lit areas, dim in dimly lit areas — and a switch is provided for a continuously bright display if desired.

A "hold" switch on the bottom panel makes it easy to time intervals or set the clock. A battery-save switch position disconnects the battery when clock is unplugged. A built-in charging circuit keeps nickel-cadmium batteries at full charge or you can wire the GC-1092D for non-rechargeable standard batteries. Whether you use it at the office, in the ham shack, or around your home, you'll find the GC-1092D the easiest way ever to keep on time and up to date. Easy-to-assemble, even if you've never built a kit before. Batteries not included.

Kit GC-1092D, Shpg. wt. 5 lbs. **79.95**

Learn more about these fascinating electronic clocks



Electronic Clocks and Watches — a complete guide to electronic timekeeping with sections on digital circuits, time-bases and more. Includes instructions for two projects.

EDP-201 . . . . . **6.50**

See page 48 for book ordering information.

2 Deluxe Digital Electronic Alarm Clock with standby battery power

You'll realize the GC-1092A is one of the world's finest digital timepieces the minute it wakes you with a gentle intermittent "beep." There are no switches or buttons to fumble for. Just touch the Heathkit "logo" on top of the case to turn off the alarm...electronically. The GC-1092A snooze alarm will let you enjoy up to an hour of 7-minute catnaps. Even if the power is interrupted during the night, a built-in battery power supply keeps the alarm — and you — on time, without the display. When AC power is restored, the correct time will once again be displayed, no need to reset the clock. If you wire the GC-1092A for nickel-cadmium batteries, a built-in circuit keeps them at full charge.

Its long list of timely features and low kit price make the GC-1092A an exceptionally good value. A convenient switch lets you select 12 or 24-hour (military) time format; an AM indicator light lets you set the alarm for either 9 AM or 9 PM; an automatic light sensor dims the display in dark rooms so it won't keep you awake at night and a battery-saver switch disconnects the batteries when the clock is unplugged for extended periods. Hours, minutes and seconds are displayed on big, ½″-high 7-segment Beckman planar gas discharge tubes for easy visibility. The handsome low-profile case in luxurious brown tones sits atop a removable pedestal base which swivels for easy viewing from any angle. Plug-in ICs and color-coded wiring make it an enjoyable kitbuilding experience. Less batteries.

Kit GC-1092A, Shpg. wt. 5 lbs. **79.95**

GC-1092A & GC-1092D SPECIFICATIONS

Power requirement: 120 VAC, 60 Hz, 7 watts. Accuracy with AC line: Determined by accuracy of power line frequency. Accuracy with battery: Depending on care in initial calibration, battery discharge curve, and temperature. Dimensions: 8⅜″ W x 4⅞″ D x 2½″ H (4″ H with pedestal). Display: 6 digits, 7 segment neon planar.

Do-it-yourself accessories for your car



Heathkit Digital Tachometer

The Heathkit CI-1079 is more responsive and accurate than ordinary meter-type tachs. The 2-digit electronic Beckman readouts sweep up to your engine's peak performance level. ½"-tall displays can be easily read even in direct sunlight. Dimmer control adjusts brightness for safe nighttime driving.

The CI-1079 helps you find the best operating RPM for just about every engine you own: the best cruising RPM for your car, your boat engine's most efficient speed, best prop selection, etc.

With 10 integrated circuits, you can build the CI-1079 in just two evenings. The black die-cast case with burl-grained vinyl insert matches the Heathkit Digital Car Clock and mounts on or under the dash. With conventional, CD or factory electronic ignitions, connect it directly to the primary side of the ignition coil. Optional inductive pickup for engines with magnetos or without access to the primary of the coil.

Kit CI-1079, Shpg. wt. 3 lbs. **49.95**

Kit CIA-1079-1, inductive pickup, Shpg. wt. 1 lb. **5.95**

CI-1079 SPECIFICATIONS

Power Requirements: 12 V, neg. gnd.. only. **Readout Accuracy:** ±4% of reading, ±1 count. **Update Time:** 0.3, 0.2 or 0.15 seconds, depending on calibration point. **Applications:** 4, 6, 8-cyl. 4-cycle engines; 2, 3, 4-cyl. 2-cycle engines; 2, 3, 4-rotor Wankel engines. **Dimensions:** 1⅞" H x 4⅝" W x 4¾" D.



Use 'em together or separately to bring your car into the "Digital Age"

Digital Car Clock with 20-hour rally timer

The GC-1093 is totally electronic with a quartz-crystal timebase that insures high accuracy — typically within one minute per month. Hours and minutes are displayed on big ½" Beckman readouts bright enough to be read in direct sunlight, yet they dim automatically at night.

To start the GC-1093's elapsed timer, just press the reset button. For the first 20 minutes the readout displays the time in minutes and seconds and after that the readout is in hours and minutes up to 19:59. Pressing a button lets you display either clock time or elapsed time, while the other function continues counting in the memory. An AM or PM indicator lights up to show you're looking at clock time, rather than elapsed time.

To reduce the drain on your battery, the display fades out when you turn the ignition off, but the clock and timer continue counting. You can "recall" the display instantly even when the ignition is off by simply pressing a button. The splashproof, die-cast case with burl-grain vinyl insert includes hardware to mount the GC-1093 on or under the dash of your car, boat, camper, or motorcycle.

Kit GC-1093, Shpg. wt. 2 lbs. **64.95**

GC-1093 SPECIFICATIONS

Power Requirements: 10-17 VDC, neg. ground only. 300 mA max., display on. 30 mA max., display off. 4.5 volts minimum for clock memory. **Accuracy:** one min. per month, typical. **Temp. Range:** −30 to +60°C. **Format:** 12 hrs. with AM, PM and 20-hour rally timer. **Dimensions:** 1⅞" H x 4⅝" W x 4¾" D. **Weight:** 3 lbs.

Heathkit Auto Intrusion Alarm lets you build security into your car



The GD-1157 protects your entire car — engine, trunk and passenger compartment — from would-be thieves by sounding your car's horn intermittently or triggering the optional siren.

Alarm Unit mounts almost anywhere on car. System can be armed or disabled by a convenient underdash switch. Controls let you enter or leave the car without triggering alarm. With system armed, alarm sounds instantly whenever hood or trunk is opened. Alarm sounds for approximately two minutes, then resets and repeats the two-minute alarm cycle.

Once the alarm sounds, the only way to disable the system is to flip Set/Reset Switch on concealed Alarm Unit. And once the passenger compartment alarm has sounded, the entry delay is defeated — further attempts to enter the car will instantly trigger the alarm. So, when you return to your car, you'll know it's been tampered with.

The optional GDA-1157-2 Horn Relay adapts the GD-1157 to cars whose horns do not use a relay or use a plug-in relay. The optional GDA-1157-1 Siren Adapter provides an attention-getting "yelping" sound louder than an ordinary car horn. Complete installation instructions included.

[1] **Kit GD-1157,** Shpg. wt. 3 lbs. **24.95**

[2] **Kit GDA-1157-1,** Optional Siren Adapter, Shpg. wt. 2 lbs. **19.95**

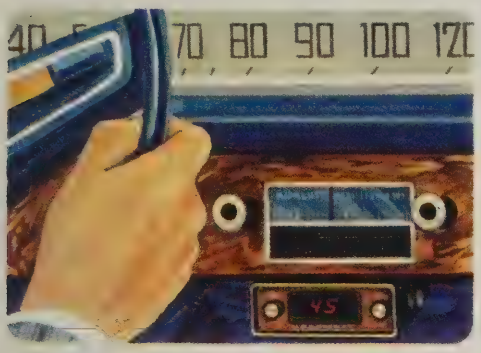
Kit GDA-1157-2, Optional Horn Relay (not shown), Shpg. wt. 1 lb. . . **2.95**

GD-1157 SPECIFICATIONS

Exit and Entry Delay Times: adjustable from 5 to 15 seconds. **Alarm Device:** auto horn or optional siren. **Temperature Range:** −4° to +140°F. off. **Power Requirement:** 12 VDC, negative ground only. **Current Drain:** negligible when system is armed but not triggered. **Dimensions:** 2⅛" H x 4¾" W x 5" D.

An important new driving FIRST from Heath!

DIGITAL ELECTRONIC MILES-PER-GALLON METER AND DIGITAL SPEEDOMETER



Digital Speedometer — Reads 0-99 miles per hour on amber-orange digital readout

HELPS YOU SAVE GAS– SAVE MONEY!

Only **$99.95**



Digital Miles per Gallon Monitor — Indicates mpg from 0-99.9 AS YOU DRIVE

This is the years ahead of Detroit kit so many of you have requested and anyone who drives should be looking for! Provides a continuous, instantaneous read-out of the relative mpg your car gets, EVERY MINUTE YOU DRIVE! You'll find yourself, automatically, adjusting your driving habits for maximum efficiency ...and that means money in your pocket and energy saved.

AS A MILES PER GALLON METER:

The CI-1078 really helps anyone who drives — especially sales people, truckers, cabbies, deliverymen — it's like having a 24-hour "efficiency expert". It continuously monitors your fuel efficiency, alerting you to poor driving habits which eat up expensive gas. It can even serve as a general overall engine condition indicator — many choke and transmission problems, and other malfunctions, show up first as a significant decrease in gas mileage.

AS A DIGITAL SPEEDOMETER:

At the flip of the front panel switch, the CI-1078 becomes an electronic speedometer with continuous digital readout, providing a better degree of accuracy than most ordinary speedometers. This is a useful feature for constant speed driving, checking acceleration times and determining your car's speed/efficiency/performance ratio.

The CI-1078 digitally reads 0-99.9 mpg or 0-99 mph on bright amber-orange ½" high gas discharge tubes that are easy to see in any light. There's even a dimmer control to adjust the display for comfortable night driving. Good-looking die-cast case with burl-grain vinyl insert. Includes hardware and brackets for mounting in or under dash, or on car's floor "hump".

IMPORTANT NOTICE

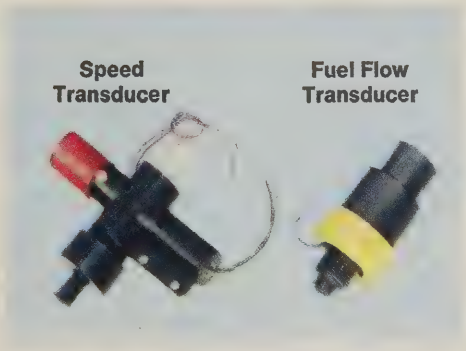
Transducer installation requires good mechanical skill and in some instances a certain amount of ingenuity — since every make and model car is different. We cannot supply exact installation information for every car. In some cases you may choose to have a qualified mechanic install the speed and fuel flow transducers for you. Heath cannot be responsible for damages, labor charges or replacement parts associated with transducer installation.

FUEL FLOW TRANSDUCER

Mounts in fuel line between fuel pump and carburetor (requires cutting and removal of a section of fuel line).

SPEED TRANSDUCERS

Depending on the make and model of your car, mounts on speedometer (or cruise control on cars so equipped) or at transmission. Includes associated cables, connectors and extensions where necessary. See list below to determine which speed transducer model fits your car. Information not available for car models not listed.



CALIBRATION

You calibrate the mpg function of the CI-1078 to the characteristics and actual performance of your own car. This is done by manually calculating the average mpg of your car while driving over flat roads. The unit is then set to the known average while operating the car under the same conditions. The CI-1078 will continuously monitor mpg from that reference figure. Readout is always as accurate as your initial calibration.

Speedometer calibration is done in much the same manner. While driving at a constant, known speed, the speedometer calibration control is set to reflect that speed.

Note: These kits differ only in the speedometer transducer supplied. Order the one below that fits your car.

CI-1078-1. For speedometer cable mounting on: '55-'68 Chrysler Corp. Cars. '55-'71 Chrysler Corp. trucks; '55-'68 GM cars (except Opel); '55-'71 GM trucks (except LUV); '55-'68 Ford cars; '55-'72 Ford Trucks (except Courier); '55-'71 American Motors Cars; '72-'75 Gremlin, Sportabout and Hornet; '55-'66 Studebaker; '55-'75 Jeep; '55-'75 English Ford. For Cruise Control mounting on '69-'75 Chrysler Corp. cars; '69-'75 GM cars (except Opel); '55-'75 Ford cars.

Kit CI-1078-1, Shpg. wt. 5 lbs. **99.95**

CI-1078-2. For transmission mounting on: '69-'75 GM cars (except Opel); '72-'75 GM trucks (except LUV); '69-'75 Chrysler Cars; '72-'75 Chrysler trucks.

Kit CI-1078-2, Shpg. wt. 5 lbs. **99.95**

CI-1078-3. For transmission mounting on: All Opel cars; '72-'75 Audi; '55-'75 BMW; '55-'75 Mercedes; '55-'75 Fiat; '55-'72 Saab; '55-'75 Volvo. For speedometer mounting on '55-'75 Porsche and VW.

CI-1078-3, Shpg. wt. 5 lbs. **99.95**

CI-1078-4. For speedometer mounting on: '69-'75 Ford cars; '73-'75 Ford trucks (except Courier).

Kit CI-1078-4, Shpg. wt. 5 lbs. **99.95**

CI-1078 SPECIFICATIONS

Display: 3 digits, gas discharge. 0-99.9 miles per gallon. 0-99 miles per hour. **Controls:** Front — mpg/mph pushbutton switch, display dimmer. Rear — update control, mph calibration, mpg calibration. **Speed transducer:** DC generator, 0-1.5 volt output with accuracy of 3% of 1 volt. **Flow transducer:** Photo resistor sensor measures fuel flow, 1.5 to 12 gallons per hour with accuracy ±3% of maximum flow rate. **Electronics:** Accuracy, ±2% of maximum reading. **Temperature Range:** 0-60° C operating, −40° to +70° C storage. **Power requirements:** 10 to 17 VDC at 500 mA; 13.5 to 17 volts required to meet specifications. **Display unit dimensions:** 1⅞" H x ⅝" W x 4¾" D. **Display unit weight:** 2 lbs.

ORDERING INFORMATION

WHEN ORDERING, PLEASE SPECIFY MAKE, MODEL AND YEAR OF YOUR CAR. BE SURE YOUR CAR IS COVERED IN THE SPEED TRANSDUCER LISTINGS. HEATH CANNOT PROVIDE INFORMATION ON OTHER MODELS AT THIS TIME.

Charge a kit — no money down on any kit — see page 50 for details.

12"screen Professional Ignition Analyzer





Heathkit CO-2500 puts professional analyzer performance in your shop at up to $1000 less...kit or assembled



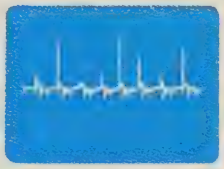
Defective coil or condenser



Incorrect dwell time



Distributor cam wobble



Low firing voltage



The CO-2500 requires only four simple connections to an operating engine. Included with the kit is an easily assembled cable with three clamps and a handy inductive pickup for easy connections.

The new Heathkit CO-2500 Ignition Analyzer has everything you need to professionally tune your car's ignition. It does everything any other professional analyzer can do — and more. And it costs up to $1000 less! It's a complete large screen analyzer in a compact package with all controls Heath-engineered for maximum ease of operation. It will provide all the information you need to tune standard (Kettering) transistorized or capacitive discharge ignition systems — even the high energy systems in new cars. Included are features like automatic cylinder selection (a Heath exclusive) for correct tachometer readings and Power Balance testing to isolate single cylinder performance. You can test your car's engine for plug and breaker point gaps, defective coil, condenser and plugs...indicate cam wobble and distributor problems...measure dwell angle for easy adjustment...find fouled or shorted plugs...find faulty spark plug wires...indicate incorrect primary or secondary ignition voltage...incorrect power balance...and identify many other ignition electrical problems. Included is an adaptor for use with the new high energy GM ignition systems. The optional timing light allows you to check and adjust ignition timing for maximum performance and economy. The optional alternator adaptor will help identify faulty alternator diodes, windings or stator.

The large 12-inch screen provides a bright trace that can easily be seen from a distance. The screen graticule has easy readability with two calibrated primary and secondary voltage grids and dwell indication for 3, 4, 6 and 8 cylinder or 2-rotor Wankel engines.

Cylinder selection is automatic with the CO-2500. The tach always reads correctlly because there's no need to adjust for number of cylinders. The SUPERIMPOSE pushbutton produces a display that represents all of the cylinder patterns simultaneously—one on top of the other. When one of the SINGLE CYLINDER pushbuttons is pressed, the CO-2500 will display only the dwell pattern for that cylinder. The Power Balance feature of the CO-2500 can quickly pinpoint poor individual cylinder performance due to faulty valves or rings. A complete introduction to ignition analysis is described in the CO-2500 operating manual.

Kit CO-2500, 66 lbs., Exp./Frt. **379.95**
Assembled WO-2500, 63 lbs., Exp./Frt. **695.00**

Please allow up to 8 weeks for delivery

CO-2500 SPECIFICATIONS

Front Panel Controls: Scope: Intensity, Vertical Position, Vertical Gain, Horizontal Position, Trace Length. Secondary volts: 20 kV or 40 kV. Primary Volts: 40 V or 400 V. Parade or Superimpose. Power Balance or Single Cylinder (8 pushbuttons, plus "Cancel"). **Tachometer:** 1000 rpm, 3000 rpm, or 6000 rpm. **Voltmeter:** 18 VDC or 36 VDC. **General: For Use With:** Standard, transistorized, or C-D ignition systems. 3, 4, 6, or 8-cylinder (4 cycle), or 2-rotor Wankel engines. **Preset Controls:** Focus, Gain, Balance, Hi-Voltage, Tac Cal (Tachometer Calibration). **Cables:** Inductive pickup for parade and Timing Light Trigger. Direct connection to ground and primary. Calibrated capacitive secondary pick-up. **Signal Pickup:** Direct for primary, inductive for parade trigger, and capacitive for secondary. **Tachometer and Voltmeter Accuracy:** ±3% of full scale on any range. **Scope Vertical Expand:** Minimum 2 to 1. **Scope Horizontal Expand:** Sufficient to display a single cylinder full screen. **Power Requirements:** 110/130 or 220/260 VAC, 50/60 Hz. **Dimensions:** 12⅞" H x 22¾" W x 14⅛" D.

Timing Light for your "2500"



The COA-2500-1 solid-state timing light plugs into the CO-2500 and provides a flash that is many times brighter than the flash from timing lights that operate from only the spark plug voltage. Available kit or assembled.

Kit COA-2500-1, Shpg. wt. 3 lbs. **19.95**
Assembled WOA-2500-1, Shpg. wt. 3 lbs. **29.95**

"2500" Alternator Test Adaptor

Adaptor permits display of alternator charging system outputs to determine if the alternator has faulty diodes, shorted windings or shorted stator.

Kit COA-2500-2, Shpg. wt. 1 lb. **5.95**



"2500" Scope Cart

Keeps your CO-2500 mobile. Holds analyzer at just the right height for easy viewing when you're working under the hood. Rugged particle board steel tubing construction bolts together easily.

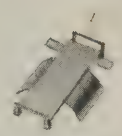
Kit COA-2500-3, 25 lbs., Exp./Frt. **34.95**

Charge a kit — no money down on any kit — see page 50 for details.

Heathkit helps you keep the going great



$159.95



Optional adapter allows you to use the CO-1015 with GM High Energy Ignitions.



$64.95

Diagnose ignition problems on this 5″ scope

• Built-in rpm indicator • Clamp-on inductive pickup

The Heathkit CO-1015 Ignition Analyzer detects shorted spark plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, coil, condenser or transistor or CD circuitry problems. Can be used with any standard, transistorized or capacitive discharge system on three, four, six or eight-cylinder engines. Shows four different patterns — primary or secondary, in either parade or superimposed displays. For detailed analyses, horizontal sweep can be expanded 10 to 1, vertical sweep 2 to 1. With operation handbook.

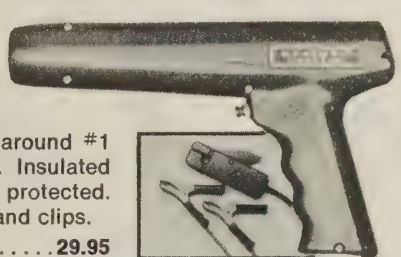
Kit CO-1015 Shpg. wt. 21 lbs. **159.95**
Kit COA-1015-1, 12V Inverter, Shpg. wt. 4 lbs. **32.95**
Kit COA-1015-2, G.M. HEI adapter, Shpg. wt. 1 lb. **3.00**

CO-1015 SPECIFICATIONS

Power Requirement: 120/240 VAC, 60/50 Hz, 16 W. **RPM Range:** 400-5000. **Cylinders:** 3, 4, 6 or 8. **Vertical Expand:** Approx. 2 to 1. **Horizontal Expand:** Approx. 10 to 1. **Sweep Length:** ±5% over entire RPM range. **Intensity:** Fixed. **Presets:** Focus, Astigmatism, Trigger Adjust, Tac Cal. **Connection Cables:** 12′ pick-up clamp; ground and secondary clip leads extend 2′ beyond pick-up clamp. **Tachometer:** 0-1000 RPM, 0-5000 RPM ±5% of full scale. **Dimensions:** 7″ H x 10½″ W x 17½″ D.

WO-5104, Wired version of above. **209.95**

Deluxe Timing Light flashes brighter than daylight



Handy inductive pickup snaps around #1 plug wire. Bright Xenon bulb. Insulated blue plastic housing. Polarity protected. Comes with all cables, pickup, and clips.

Kit CI-1040, Shpg. wt. 4 lbs. **29.95**

CI-1040 SPECIFICATIONS

Useful Light Range: Up to 2 ft. in daylight. **Engine Speed Range:** Full flash brightness up to 2000 rpm. **Triggering:** Current pickup coil. **Power Requirement:** 12 VDC battery or separate 15 VDC power supply. **Dimensions:** 6½″ H x 2″ W x 10″ L.

Economy Timing Light

Flash can be seen in direct sunlight. Easy to use; connect one cable to battery, the other to spark plug or distributor cap. Insulated housing, polarity protected. With all cables.

Kit CI-1020, Shpg. wt. 3 lbs. **19.95**



only $19.95

CI-1020 SPECIFICATIONS

Useful Light Range: Up to 2 feet in daylight. **Engine Speed Range:** Full flash brightness up to 2000 rpm. **Triggering Requirement:** Direct connection to number one spark plug of engine ignition system. **Power Requirement:** 12 VDC battery or 15 volt DC power supply. **Size:** 6½″ H x 2″ W x 10″ L.

Exhaust Gas Analyzer checks fuel efficiency

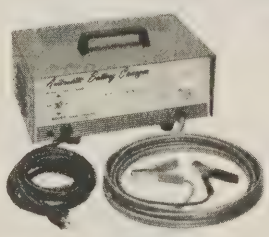
Monitors exhaust for minimum pollution & maximum efficiency by measuring thermal conductivity of gases. Shows air-fuel ratio combustion efficiency and percent carbon monoxide.

Kit CI-1080, Shpg. wt. 6 lbs. **64.95**

CI-1080 SPECIFICATIONS

Meter Scales (3): 11.5-15.0 Air-Fuel Ratio. 70%-90% Combustion Efficiency. 0-8% Carbon Monoxide. **Exhaust Type:** From 4-cycle gasoline engines. Not for use with catalytic converters. **Accuracy:** Within 1 Air-Fuel Ratio depending on fuel used. **Meter:** 4½″, 100-0-100 μA. **Connectors:** Battery cord, 7 feet. Sensor cord, 21 feet. Exhaust flexible tube, 30 inches. **Power Requirement:** 6-volt or 12-volt car battery, less than 150 mA. **Weight:** 4 lbs., 12 oz.

15-Amp Automatic Battery Charger



Has 50-amp boost. Use on negative or positive ground. Circuit breaker protection.

Kit GP-1044, Shpg. wt. 22 lbs. **57.95**

GP-1044 SPECIFICATIONS

Charge Rate at 120 VAC (primary): Boost; 50 amperes (maximum 1 minute). Normal; 15 amperes, decreasing to less than 2 amperes at full charge. **Output Voltage:** 14.5 volts. **Power Requirement:** 110 to 130 VAC, 60 Hz. **Dimensions:** 6⅛″ H x 11½″ W x 7¾″ D.

10-Amp Automatic Charger

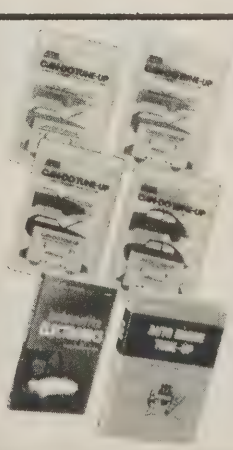


Won't start unless correctly connected. Won't overcharge.

Kit GP-21, Shpg. wt. 13 lbs. **36.95**

GP-21 SPECIFICATIONS

Charge Rate: 10 amperes maximum at 120 VAC line. **Output Voltage:** Between 13.2 VDC and 13.6 VDC. **Power Requirement:** 105-130 VAC, 60 Hz. **Dimensions:** 5½″ H x 9″ W x 6⅜″ D.



Save on maintenance with "Can-Do Tune-Up" guides — step-by-step instruction book & cassette tape

A completely new way to handle tuneups — an illustrated booklet gives you all the information you need and a cassette actually "talks you through" the important steps. Each book also includes information on periodic maintenance and a complete troubleshooting chart. For 1964-1974 6 and 8-cylinder engines.

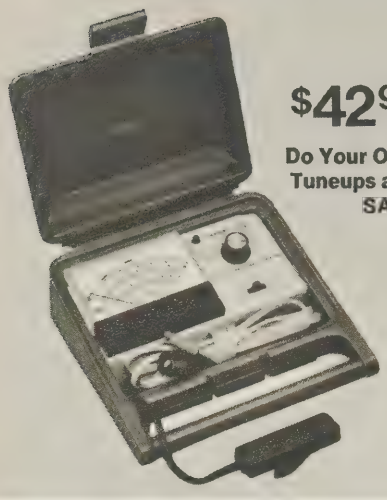
EDP-204, GM vehicles **7.95**
EDP-205, Ford, Lincoln, Mercury vehicles **7.95**
EDP-206, Chrysler, Plymouth, Dodge vehicles **7.95**
EDP-207, VW vehicles **7.95**

Automotive Electronics — a look at the state-of-the-art, plus a complete explanation of your car's electrical & ignition system. **EDP-162** **7.95**

Auto Engine Tune-Up — a complete how-to-do-it guide to car engine tune-up, including carburetion & ignition. **EDP-163** **6.75**

See page 48 for book ordering information.

Cure your car with Heathkit Auto Test Gear



$42.95

Do Your Own Tuneups and SAVE

$69.95 Kit



HEATH charg-a-kit REVOLVING CHARGE

Small Engine Tune-up Meter

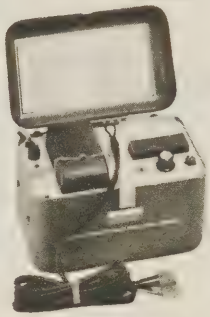
Tests volts, ohms, dwell & continuity on 1 to 4 cylinder 2 & 4 cycle engines. Built-in tach, snap-on pickup. Less batteries.

Kit CM-1045, Shpg. wt. 5 lbs. **42.95**

CM-1045 SPECIFICATIONS

Voltmeter: 0-20 V DC. **Ohmmeter:** 0 to 100 kΩ (10 kΩ center scale.) **Tachometer:** Two ranges: 0-3000 rpm. 0-15000 rpm. **Dwell Meter:** Four scales: 1 cylinder; 90°-360°; 2 cylinder; 40°-180°; 3 cylinder; 30°-120°; 4 cylinder; 20°-90°. **Continuity:** Lamp indicator. **Operating Temperature Range:** 0°F-140°F with alkaline batteries. 32°F-140°F with zinc-carbon batteries. **Meter Accuracy:** Ohmmeter: ±3 degrees arc at 76°F, ±5 degrees arc at 0°F and 140°F. Other functions: ±3% at 76°F, ±5% at 0°F and 140°F. **Power Source:** Three 1.5 V C batteries. **Dimensions:** 9⅛″ H x 9⅜″ W x 5¼″ D.

GM Voltage Regulator-Tester



Shows condition of all 4 circuits in the GM Integral Charging System regulator. Optional test leads for under-hood testing.

CTW-1170, assembled form, 15 lbs. . . **99.95**

CTW-1170-2, optional external leads, Shpg. wt. 1 lb. **6.00**

CTW-1170 SPECIFICATIONS

Test Voltage: 16.5 VDC. **Sense Voltage:** Adjustable 0-17 VDC. **Voltmeter:** 0-20 VDC ±3%. **Short Circuit Current:** 0.1A. **Power Requirement:** 120 VAC, 60 Hz, 150W. **Case:** Aluminum. **Dimensions:** 7″ H x 11″ W x 7″ D.

Hanson Basic Tester Set



Helps you keep your car in top shape! Includes Model 714 Remote Starter Switch, Model 715 Deluxe Compression Tester, Model 709 Vacuum & Fuel Pump Tester. "Must" tools for every professional and amateur.

CGP-1036, Assembled. Shpg. wt. 3 lbs. **11.95**

Using Electronic Testers for Automotive Tune-Up — Ideal companion to Heathkit electronic tune-up tools. **EDP-165** **4.95**

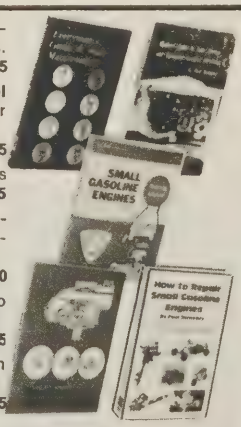
Modern Guide to Auto Tune-Up and Emission Control Servicing — tells in plain language how to tune your car for best gas mileage and lowest emissions. **EDP-166** **5.95**

Auto Repair Manual — Chilton's famous classic, covers U.S. cars 1967 to 1975. **EDP-168** **11.95**

Small Gasoline Engines Training Manual — theory, design & operation of every domestic & foreign made engine — 2 & 4 stroke plus rotary (Wankel). **EDP-169** **7.50**

Small Engines Service Manual — has all info needed to service small engines. All popular makes covered. **EDP-170** **7.95**

How to Repair Small Gasoline Engines. Covers lawn mowers, chain saws, motorcycles, etc. **EDP-188** **5.95**



See page 48 for book-ordering information.

Deluxe low-cost Engine Analyzer

This professional-grade instrument tests conventional, magneto, transistor, and most capacitive discharge ignition systems, regardless of voltage or grounding, on any 3, 4, 6 or 8-cylinder engine. It permits rapid servicing of storage battery, generator or alternator, voltage regulator, starter, distributor, ignition circuit (points, condenser and coil), accessories and all electrical wiring. The large 6″ meter is color coded for easy-reading. Unlike most other analyzers, there is no need to recalibrate between functions. Accuracy is ±3% on all ranges over a wide temperature range. Operates on 3 "C" cells (not supplied). With leads, accessories.

Kit CM-1050, Shpg. wt. 8 lbs. **69.95**

CM-1050 SPECIFICATIONS

Voltmeter Ranges: 0-3.2 V DC. 0-32 V DC, ±3% of full scale. **Ohm-meter:** Two ranges: R x 1 (100 Ω center scale). R x 100 (10 kΩ center scale), ±3° arc. **Tachometer:** Two ranges: 0-1200 rpm, 0-6000 rpm, ±3% of full scale. **Dwell Meter:** Two ranges: 0-45° (on 0-60° scale). 0-60°, ±3% of full scale. **Amperes:** −5 to +90 amperes DC, ±3% of full scale. **Spark Output:** 0-50. **Point Resistance:** Good/Bad. **Alternator:** Good/Bad. **Condenser:** 0.22 μF, 10%. **Accuracy:** ±3% of full scale. **Cables Supplied:** Two 8″ two-conductor test cables. One 2′ alligator to alligator lead. One 2′ alligator to push-on connector lead. One calibration cable. **Accessories Supplied:** 90-ampere shunt. 0.25 Ω resistor assembly. One insulation-piercing alligator clip. Two #10 solder lugs. (#14). **Dimensions:** 7½″ H x 10½″ W x 8¾″ D.



$29.95

Three-In-One Tuneup Meter

Three automotive test instruments in one. Measures dwell on most 4-cycle 3, 4, 6 and 8-cylinder engines having conventional (Kettering) ignitions. Shows RPM on two scales — 0-1500 and 0-4500. Checks voltage from 0 to 15 volts. It can be used with both 6 and 12-volt systems having either positive or negative ground. It has just two leads and uses no batteries.

Kit CM-1073, Shpg. wt. 5 lbs. **29.95**

CM-1073 SPECIFICATIONS

Dwellmeter: Three dwell scales: 8 cyl., 10-45 degrees; 4 cyl., 20-90 degrees; 6 cyl. & 3 cyl. x 2, 25-60 degrees. **Tachometer:** Two RPM ranges; Low range — 0-1500 RPM; High range — 0-2500 RPM. **Voltmeter:** Direct reading scale, 0-20 VDC. **Power Requirement:** 10 mA approximate average current. **Meter:** 4½″, 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 4¼″ H x 8½″ W x 7¼″ D.

Garage Door Openers Are Year 'Round Work-Savers

Build the best!...Heathkit deluxe Garage Door Opener

Touch the button on the wireless transmitter in your car — your garage door opens and the light turns on. Touch the button again, the door closes, and the light stays on long enough to see you safely inside your house. Door travel reverses, returns to full open if it is obstructed while closing. Adjustable slip clutch provides opening safety. Self lubricating screw drive & husky ⅓ hp motor assure quiet dependable operation.

Assembly couldn't be easier, most of the work is already done for you. The transmitter and receiver are fully wired, so there's absolutely no soldering! The connecting leads are cut to the proper length with push-on connectors already installed. A doorbell-type button and connecting wire are included for manual use.

Kit GD-3209A, System with 1 transmitter, Shpg. wt. 49 lbs. **149.95**
Kit GD-3209B, System with 2 transmitters, Shpg. wt. 49 lbs. **164.95**
Kit GDA-3209-1, Mechanism only, Shpg. wt. 47 lbs. **114.95**
Kit GDA-3209-2, Adaptor for jamb & pivot doors, Shpg. wt. 3 lbs. **9.95**
GDP-99, Transmitter, specify frequency, Shpg. wt. 1 lb. **19.95**
GDP-119, 1 transmitter, 1 receiver, Shpg. wt. 1 lb. **39.95**
GDP-129, 2 transmitters, 1 receiver, Shpg. wt. 2 lbs. **54.95**



$149.95

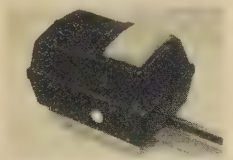
HEATH charg-a-kit REVOLVING CHARGE

- ***Stop Fighting Heavy Garage Doors in Bad Weather***
- ***Extra Safety Too — Stay in your car until you're safely in the garage***
- ***75-Watt light stays on until you're safely in the house — then turns itself off — automatically***
- ***Easy to install — transmitter and receiver are completely pre-wired***
- ***Safety-Reverse Feature — Door instantly reverses and returns to full open if obstructed***

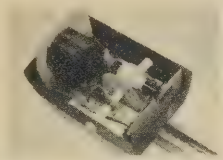




Permanently-installed up/down limiters — no special tools needed.



Rugged plastic case with built-in time-delay safety light.



Powerful ⅓ hp motor easily opens the heaviest residential doors.

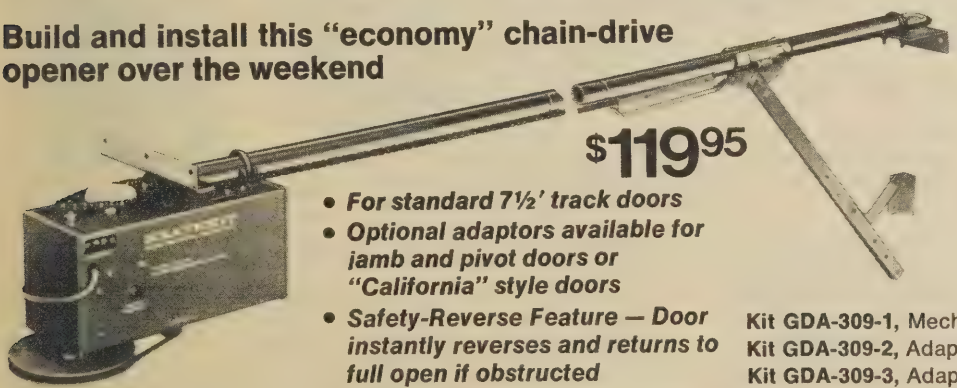


Self-lubricating screw drive for reliable, maintenance-free operation.

GD-3209A SPECIFICATIONS

Overall size: 120″ L x 12″ H x 9″ W. **Motor:** 117 VAC ⅓ HP. **Open and Close Time:** Approx. 12 seconds. **Mounting Clearance:** 3″ above highest point of door travel. **Safety Lamp:** Delay circuit keeps lamp on 1 to 3 minutes. **UHF TRANSMITTER:** Powered by standard 9-volt battery. **RF Frequencies:** 290 to 320 MHz. **Useful Temperature Range:** —50°F. to +140°F. **UHF RECEIVER:** Powered by 24 VAC from opener mechanism. Usable on any mechanism having 24 volt AC NEC class II circuit. **RF Frequencies:** 290 to 320 MHz. **Temperature Range:** —55°F. to +140°F.

Build and install this "economy" chain-drive opener over the weekend

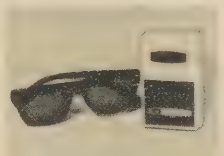


$119.95

- ***For standard 7½′ track doors***
- ***Optional adaptors available for jamb and pivot doors or "California" style doors***
- ***Safety-Reverse Feature — Door instantly reverses and returns to full open if obstructed***
- ***Factory-assembled transmitter and receiver***

A powerful quarter-horsepower chain-drive opener at a great kit price! The GD-309 operates standard 7½′ track doors or jamb and pivot doors with GDA-309-2 adaptor, or "California" style doors with GDA-309-3 Speed Reducer Adaptor. Self-locking, automatic reversing, Quick-release pin. Factory-assembled receiver has adjustable tone encoding to prevent interference from neighboring units. Includes "doorbell" button & wire for manual door operation.

Kit GD-309A, System with 1 transmitter, Shpg. wt. 51 lbs. **119.95**
Kit GD-309-B, System with 2 transmitters, Shpg. wt. 51 lbs. ... **134.95**



Portable transmitter comes factory-assembled with a range of up to 150′. (For use with Heathkit systems only.)



Solid-state UHF Receiver comes factory assembled & adjusted.

Kit GDA-309-1, Mechanism only, Shpg. wt. 52 lbs. **89.95**
Kit GDA-309-2, Adaptor for jamb & pivot door, Shpg. wt. 3 lbs. .. **4.95**
Kit GDA-309-3, Adaptor for vertical-opening 1-pc. "California" style doors, Shpg. wt. 4 lbs. **9.95**
(To order additional transmitters & receivers, see listing under GD-3209A above.)

GD-309A SPECIFICATIONS

Overall Sizes: 123″ L x 10″ H x 8½″ W. **Motor:** 120 VAC ¼ HP. **Open and Closing Time:** Approx. 9 sec. for 7′ door. **Control:** Wall-mounted, doorbell-type push-button switch, or optional devices (transmitter-receiver, key switch, etc.). **Safety:** Door travel reverses instantly and returns to full open position when obstructed. **Overhead Mounting Clearance:** 2½″ above highest point of door travel. **Safety Lamp:** 60 watts. Automatically turns on when the door is fully open and stays on until door starts to close. **Transmitter and Receiver Specifications:** Same as GD-3209A above.

Assembled transmitters and receivers listed in order numbers above are FCC certified as Heathkit Model Nos. 30 and 38.

Make Your Car, Boat or Plane Safer

$39.95 *Build them both for a top-performing, totally electronic ignition system!* $44.95



Heathkit CD Ignition System

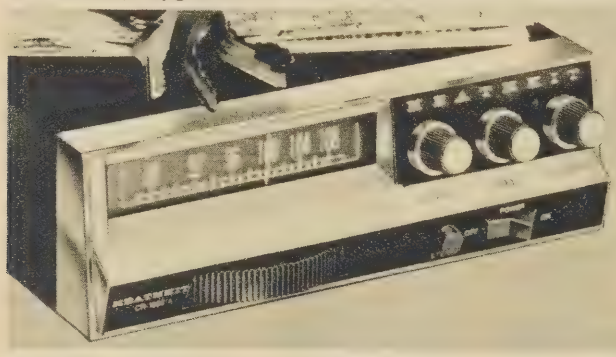
Gives improved performance, saves plugs, points, delivers up to 50,000 miles between tune-ups on cars, trucks, inboard I/O & outboard marine engines with conventional 12V battery/distributor/coil negative ground systems. Assures fast, sure starts in any weather, improved gas mileage! External override button switches to conventional system. Build it in a couple of hours, install in less than that. Mounts in wheel well or other convenient spots. Measures 3⅛" H x 3¾" W x 6" D. Not recommended for 1974 and 1975 cars in the state of California.

Kit CP-1060, Shpg. wt. 3 lbs. **39.95**

Breakerless Ignition Adaptor

Develops a timing signal that isn't subject to mechanical problems of point wear and bounce, maintains timing correctly at all speeds and for longer periods. Designed for use with capacitive-discharge ignition systems only (such as Heathkit CP-1060) the CP-1051 replaces the points of all pre-1975 GM V-8 and V-6 engines, and all AMC V-8s with external dwell adjustment (not for other models). The easy-to-build unit mounts inside engine compartment; sensor mounts inside the distributor, without removing points. Switch returns engine to normal.

Kit CP-1051, Shpg. wt. 2 lbs. **44.95**





Build this "Better" Heathkit Car Stereo FM Tuner

Enjoy stereo FM entertainment as you drive, with excellent fidelity. The improved Heathkit CR-1000A FM Stereo Tuner features a new Phase Lock Loop demodulator and improved circuit layout to bring you greater stability and separation, better AM rejection, and easier kitbuilding through simplified alignment procedures. Great specs too—less than 1% THD; frequency response ±1 dB, 30 to 15,000 Hz; 3 μV sensitivity; 60 dB selectivity; 40 dB nominal separation. Other features are: muting circuit for noise quieting between stations; AFC; Tuning, Volume, Tone & Balance controls; on-off switch; stereo indicator light. Requires power amp. (right) for operation.

Kit CR-1000A, Shpg. wt. 7 lbs. **69.95**

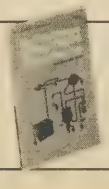
Kit CRA-1000-1, Power amp., fits back of tuner, for 12V battery. Shpg. wt. 3 lbs. **29.95**

[1] **CRA-1000-2,** 4½", 4-ohm door-mount hi-fi speakers (including grilles, adapter plates for most speaker size openings and 24' speaker lead).

Shpg. wt. 6 lbs. . . . . (pair) **14.95**

[2] **CRA-1000-5,** 6"x9" 4-ohm rear deck mount hi-fi speakers (including grilles and 24' speaker lead).

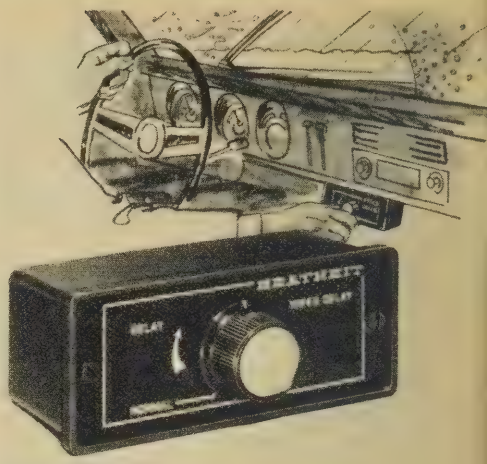
Shpg. wt. 7 lbs. . . . . (pair) **21.95**



Find out about the latest in Ignition Systems

Solid-State Ignition Systems — explores all known commercially available methods, including Capacitive Discharge and breakerless systems; covers servicing and troubleshooting techniques. **EDP-185** **4.50**

See page 48 for book-ordering information.



Heathkit Windshield Wiper Delay

Eliminates turning wipers on and off while driving in fog, mist, or light rain. A front panel control gives you selection of "normal" and "delay" modes. A preset control varies the number of sweeps, the front panel control varies delay time. An easy kit to build. The handsome one-piece molded plastic case mounts on or under the dash with adhesive strip or bracket. See compatibility specifications below.

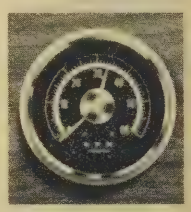
Kit CH-1068, Shpg. wt. 2 lbs. **15.95**

CH-1068 SPECIFICATIONS

Delay interval: 5 to 30 seconds minimum. **Sweeps interval:** .5 to 10 seconds minimum. **Input voltage:** 13.8 volts DC, ±20%. Positive or negative ground. **Temperature range:** —30°C. to 65°C. —22°F. to 149°F. **Wiper System Compatibility:** (Electric Only) GM: All single and two speed systems. Ford: Most small and intermediate models. Not compatible with full size models or '72-'75 Torino, or Montego, '74-'75 Cougar. Chrysler: Single and two speed systems on small and intermediate models which do not use a motor reversing parking system. Ask dealer about your car's system. AMC: Single and two speed systems. Other models: Electric wipers which do not use a motor reversing parking system.



With Case



Panel Mount

Solid-State Tachometer Kit

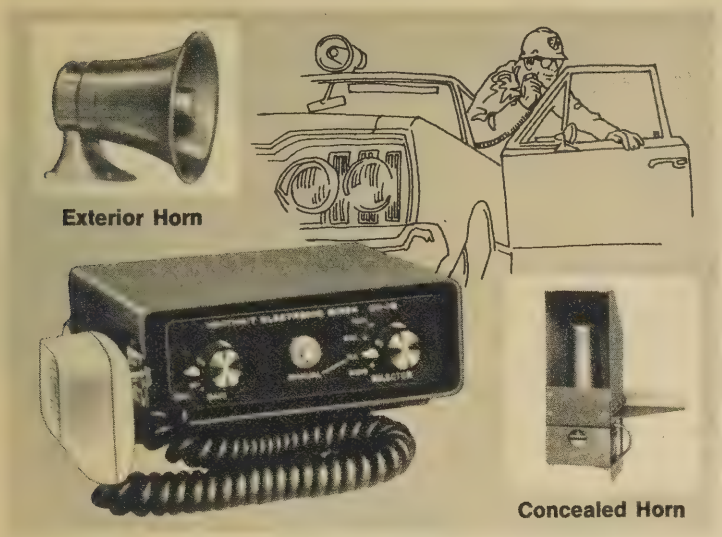
Indicates engine rpm, helps you determine shift points for best engine performance and efficiency. Build it for 6000 or 9000 rpm range, use it on 1-6 cyl., 2 cycle or 2-8 cyl. 4 cycle engines; 12V conventional, magneto, transistor or capacitive discharge ignition. Triggers from points or inductive pickup supplied. Wide angle 250° edge-lighted dial with white indicator, adjustable pointer, non-scratch glass face, black & chrome case or panel mount (panel mount requires 3¼" hole, 2¼" deep.)

Kit MI-18-1, panel model,
Shpg. wt. 3 lbs. **34.95**

Kit MI-18-2, with case,
Shpg. wt. 3 lbs. **39.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

and More Enjoyable with These Heathkit Accessories



Kit or Assembled Siren/PA System

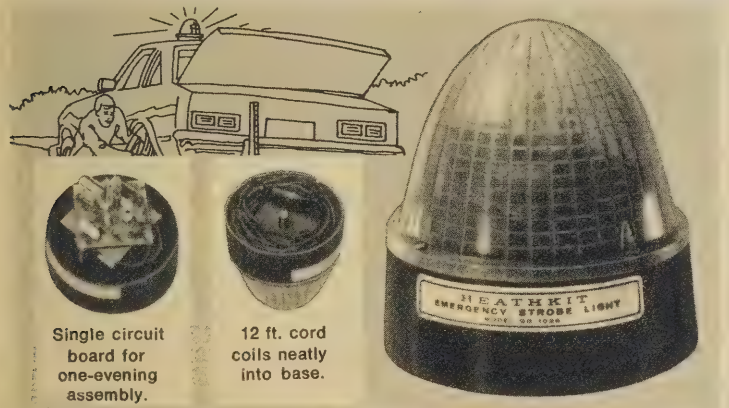
Heathkit Siren/PA System works as electronic siren at 55 watts; adjustable pitch. Packs 20 watts into a booming PA system; lets you hear radio calls away from your vehicle. Choice of speakers, concealed or exposed horn. Concealed speaker requires 4½" x 4½" x 13" behind grille. NOTE: Please check the required standards for mobile sirens in your area.

Kit GD-18, Shpg. wt. 6 lbs. **64.95**
Assembled WD-5130, siren/PA amp, Shpg. wt. 6 lbs. **89.95**
Assembled GDA-18-1, exterior horn, Shpg. wt. 10 lbs. **62.95**
Kit GDA-18-2, concealed horn, Shpg. wt. 10 lbs. **62.95**
Assembled WDA-5130-2, concealed horn, Shpg. wt. 10 lbs. **74.95**

Buy a complete system and SAVE $7.95

If purchased separately, $127.90 Shpg. wt. 16 lbs.

GD-18A (GD-18 & Exterior Horn) **119.95**
GD-18B (GD-18 & Concealed Horn) **119.95**



Single circuit board for one-evening assembly.

12 ft. cord coils neatly into base.

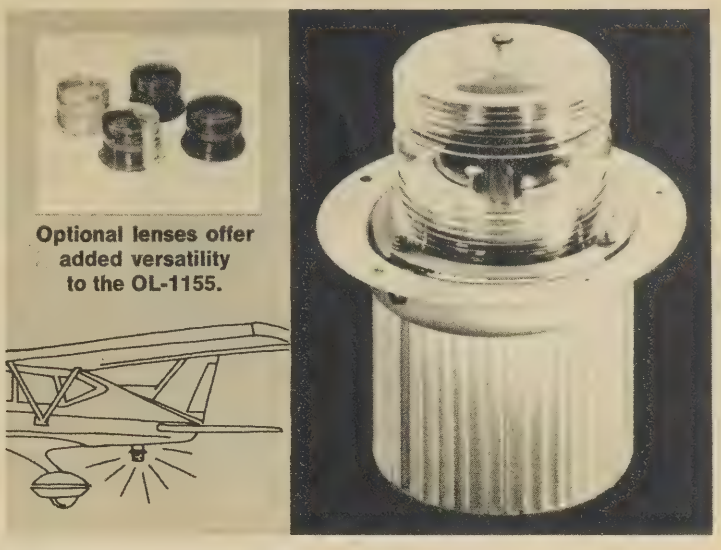
Heathkit Emergency Strobe Light provides extra safety for nighttime driving

The Heathkit GD-1026 Emergency Strobe Light is a portable high-intensity arc discharge flasher specifically designed as a highway emergency warning or signal light. Just insert the adaptor plug provided into your car's cigarette lighter. A 12 ft. cord lets you place the flashing light in any spot on the car. Has non-marring magnetic base plate, highly visible flashing strobe with amber dome lens. The entire unit is constructed of high impact plastic that is both moisture and corrosion resistant. And the cord coils neatly into the base so that the unit can be stored away in the trunk, ready for instant use.

Kit GD-1026, Shpg. wt. 3 lbs. **29.95**

GD-1026 SPECIFICATIONS

Supply voltage range: 13.8 VDC ±20%. **Power consumption:** 5 watts nominal. **Flash voltage range:** 450 VDC ±20%. **Flash repetition rate:** greater than 1 per sec. **Operational temperature range:** −30°C to +60°C.



Heathkit Aircraft Strobe Light for aircraft, emergency vehicles, boats, markers

The OL-1155 is designed primarily as an aircraft strobe light for use as an anti-collision or supplemental beacon — and can be used as a direct replacement for standard 3¾" rotating beacons. As an aircraft strobe light, the OL-1155 meets all requirements set forth in the Federal Air Regulation No. 23.1401 regarding Aircraft Anti-Collision Lighting. It operates from a 12 VDC negative ground supply. Average light output: 225 effective candle power. An internal adjustable trimmer lets you vary the flashing frequency of the strobe.

Ideal for marine foul-weather anti-collision protection; atop antennas and tall buildings; a highly visible marker light. Optional amber, red or blue lenses, below, for emergency vehicles or special applications.

Kit OL-1155, (with clear lens), Shpg. wt. 3 lbs. **64.95**
***OLA-1155-1,** Red/clear lens, Shpg. wt. 1 lb. **11.95**
***OLA-1155-2,** Red lens, Shpg. wt. 1 lb. **8.95**
***OLA-1155-3,** Amber lens, Shpg. wt. 1 lb. **8.95**
***OLA-1155-4,** Blue lens, Shpg. wt. 1 lb. **8.95**

*Does not meet FAA requirements for Aircraft Anti-collision use.

NOTE: For the FAA PMA certification necessary for aircraft installation, return your completed OL-1155 to your local Heathkit Electronic Center or the Heath factory.

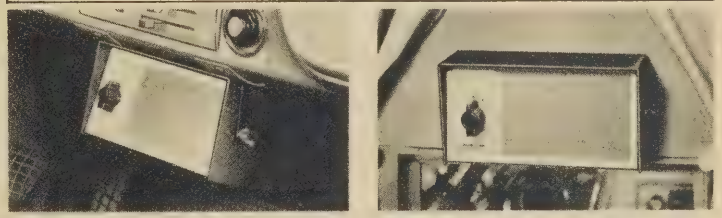
NEW! OLA-1155-5 Strobe Light Filter

Necessary accessory for the OL-1155! Reduces interference to aircraft radios caused when OL-1155 is operating. Present OL-1155 owners can incorporate it in their units with just a few simple connections.

OLA-1155-5, Shpg. wt. 2 lbs. **12.95**

OL-1155 SPECIFICATIONS

FAA Design Approval: Under STC SA2719WE for all Cessna 182 aircraft prior to S/N 53599 & STC SA2720WE for all Cessna 210 aircraft prior to S/N 57481. **Power requirement:** 12 VDC negative ground only, 1.5A. **Dimensions:** 6" H x 3 1/16" diameter (mounting plate —5½" diameter).

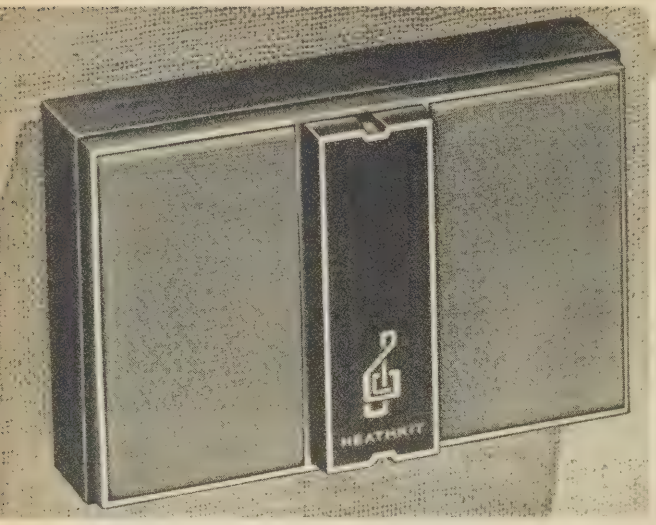


Heathkit Cab-to-Camper Intercom

3-position switch on Master selects "Stand-By", "Monitor", "Talk" modes. Remote has "Radio" position to bring music into camper from cab radio. Both Master and Remote can initiate calls. Requires 12-volt, 250 milliamp DC power source.

Kit GD-160, Master, Remote and cable,
Shpg. wt. 5 lbs. **29.95**
GDA-160-1, Accessory Plug, Shpg. wt. 1 lb. **4.50**

Welcome friends with their favorite tune





HEATH charg-a-kit REVOLVING CHARGE

Heathkit Electronic "Doorbell" is one of our most unique kits... you program it to play your favorite tune

$44.95

What an exciting way for visitors to announce themselves...your favorite melody plays when they touch the door button. Use as many as 16 notes to program your favorite tune. Change it whenever you wish...program to celebrate a season, an anniversary, a birthday, even a special party. And the TD-1089 tells you whether a visitor is at the front or rear door by the length of the tune.

Changing your tune is easy. Just rearrange the programming leads in the connectors of the C through C' "keyboard" located behind the front-panel access door. The assembly manual includes programming instructions for a variety of tunes, or you can compose your own. Controls for tuning, volume, speed, and decay characteristics of the electronically synthesized sound also are located inside the front-panel door.

Single circuit board construction makes it easy-to-build. And installation is easy too, just wire between existing bell transformer and TD-1089. The attractive brown plastic cabinet with dull-gold color trim and tan fabric panels is included in the kit.

The TD-1089 is loud enough to be heard throughout normal size homes, but you can add extra 16-ohm speakers to the "extension" terminals and spread the sound to other areas.

Kit TD-1089, Shpg. wt. 3 lbs. **44.95**

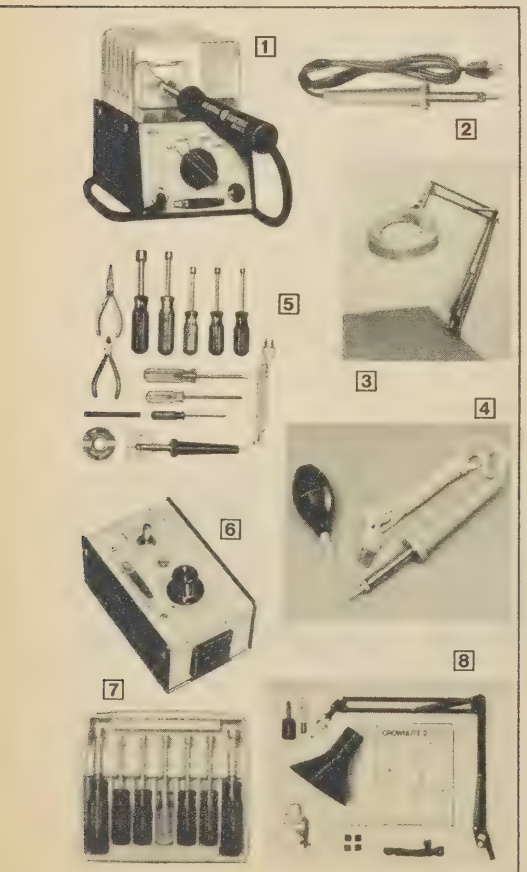


The TD-1089 is easy to program. Just remove the decorative front panel to change programming leads and make adjustments.

TD-1089 SPECIFICATIONS

Power Requirement: 16 Volts AC, 50/60 Hz, from standard doorbell transformer (not supplied) with 10 VA Rating. **Tone Characteristics:** Decaying, mellow. **Maximum Power Into Speaker:** 1 watt. **Speaker Size:** 3″ x 5″ oval - 16 Ohm. **Actuating Inputs:** Two, for front and rear doors. **Programming Matrix:** 13 notes x 16 beats — same note up to 9 beats. **Dimensions:** 5¾″ H x 8⅝″ W x 2⅝″ D. **Net Weight:** Approx. 1½ lbs. **Power Drain:** Idle, 6 watts, Maximum Output, 12 watts.

Heath-approved tools for easy building



1 **Heathkit 3-heat soldering iron kit.** Handy stand with metal cage keeps iron safe and secure. 3 heat ranges for all types of circuit work. Comes with six foot cord. Operates on 120 VAC.

Kit GH-17A, Shpg. wt. 4 lbs. **22.95**

2 **Weller W-PS 25-watt pencil soldering iron.** Lightweight and convenient. ⅛″ chisel tip develops 860° heat fast, ready to work in seconds. U.L. and C.S.A. Approved.

Model GDP-207, Shg. wt. 1 lb. **7.95**

3 **New Illuminated Magnifier.** Fluorescent lighting & 5″ dia. 3 diopter lens take the strain out of close work at your bench. Clamps to horizontal surface; 360° movement; 45″ reach. Requires 22-watt T-9 Circline Fluorescent tube (not included). Gray color.

Kit GDP-200, Shpg. wt. 7 lbs. **39.95**

4 **Heath solder/de-solder set.** Weller W-PS 25-watt pencil soldering iron that develops 860°. Includes de-solder squeeze bulb with heat and solder-resistant nozzle.

GDP-1009, Shpg. wt. 1 lb. **9.95**

5 **Kitbuilders' tool set.** Includes combination wire stripper and diagonal side cutter; small long-nose pliers; three screwdrivers (3/32″, 1/8″, 3/16″); Weller W-PS soldering iron; five nut drivers (5/16″, 1/4″, 5/16″, 3/8″, 1/2″); nut starter; soldering aid; solder, and information-packed "Kitbuilders Guide."

Model GH-25, Shpg. wt. 3 lbs. **27.95**

6 **Heathkit motor speed control.** Saves power, blades, bits, saws, etc. You can use a large drill to cut through steel at slow speed without overheating the motor. Ideal for use with any universal motor with nameplate rating of 15 amps or less. (Not for use with Dremel tools.)

Kit GD-973A, Shpg. wt. 2 lbs. **19.95**

7 **Nut driver set.** Seven drivers for most commonly used nut sizes; 3/16″, 1/4″, 5/16″, 3/8″, 13/32″, 7/16″ and 1/2″. Plastic handles are color-coded for quick identification.

Model GDP-204, Shpg. wt. 2 lbs. **10.95**

8 **Workbench extension lamp kit.** The extension arm comes already assembled. All you do is attach the socket, shade and cord. Lamp features a 34″ reach and 360° sweep; vented shade, and movable base clamp. Incandescent bulb not included.

Kit GDP-202, Shpg. wt. 4 lbs. **16.95**

The basic kitbuilding tool is the soldering iron — this book tells you how to use it like a pro.

ABCs of Electrical Soldering—a how-to book for the beginner, a review for the technician; tells what soldering is and does, how to solder and how to make solder repairs.

EDP-178 .....**3.95**

See page 48 for book-ordering information.

Find out how easy it is to build a kit — order the manual. See page 49.

Build yourself value you can count on!

1 8-digit desktop slide-rule calculator

$79.95

Performs all these functions:

sine	powers of e	pi
arc sine	common logarithms	addition
tangent	natural logarithms	subtraction
arc tangent	exponential powers	multiplication
cosine	square roots	division
arc cosine	inverses	

The IC-2100 fits where most people use a slide-rule calculator—on a desk. Easy to use with sloped keyboard and contoured, well-spaced keys. Beckman planar gas discharge digits are specially angled to reduce glare and provide maximum visibility. 12 white keys perform two functions. Normally they enter numbers, but, press the Function key and they trigger the transcendental functions. Forget to press the Function key? — DR key removes inadvertent entered digit without erasing entire entry. Four memory keys allow you to enter or add to a number already in the memory, recall the memory to the working display, interchange the memory and working displays or clear the memory. Single entries can be carried through a long series of calculations as a constant. Operates on 120 or 240 VAC.

Kit IC-2100, Shpg. wt. 4 lbs. . . . **Originally 119.95, NOW ONLY 79.95**

2 Four-function Heathkit desktop calculator

$29.95 Easy-to-read, ½"-high Beckman planar gas-discharge tubes in an 8-digit display. Sloped keyboard to let you rest your entire arm while operating the calculator. Constant key (K) simplifies repetitive problem solving. Separate equal key (=) permits entering computations as you would write them out, totaling up as you go, or working in a chain manner. Display has individual lighted indicators for entry and result overflow. A negative number sign provides credit-balance capability. Reciprocals (1/x) are quickly found using the constant, divide and equal keys. Floating decimal. IC-2108 lights up instantly. The kit is easy to build, single LSI related and only 3 circuit boards. Can be wired for 120/240 VAC. Measures 2¼" H x 7" W x 9⅝" D.

Kit IC-2108, Shpg. wt. 4 lbs. . . . . **was 64.95, NOW ONLY 29.95**

3 Calculator "package" goes with you

$49.95 Lowest price ever on this calculator "package"; IC-2009 calculator originally 92.50; carrying case originally 3.95; desk set originally 12.95 — original total value of 109.40 now "package-priced" at only 49.95 complete. Operates on internal rechargeable ni-cad battery; or plugs into charger; or use it with desk set's built-in charger. Calculator adds, subtracts, multiplies, divides. Floating decimal; chain operation; credit balance with plus & minus results; constant key (K). Battery saver circuit turns off display after 15 seconds...recall display by depressing recall key (D) or by entering new information. Calculator measures 5½" H x 3¾" W x 1¾" D. Executive Desk Set measures 2⅛" H x 8½" W x 8¾" D. Naugahyde® carrying case with felt lining and zipper closure. Battery is supplied.

ICL-2009, includes calculator kit & charger, Executive Desk Set with charger, and carrying case, Shpg. wt. 7 lbs. . . . . **NOW ONLY 49.95**





Electronic Calculators — memories, displays, design, fabrication, selection, interfacing with hard-copy equipment, servicing. **EDP-179, 5.95**

99 Ways to Know & Use Your Calculator — compute complex functions and solve complicated problems with a 4-function calculator. **EDP-208** **5.95**

Getting the Most Out of Your Electronic Calculator — a calculator math course with dozens of practical examples. **EDP-132** **4.95**

See page 48 for book-ordering information.

Heathkit Electronic Darkroom Timer helps you develop better pictures

A "must" for every well-equipped darkroom — a true electronic timer with no moving parts to reduce reliability or accuracy. The PT-15 provides accurate exposure for all contact printers and enlargers with two switch-selected ranges — up to 99 seconds in 1 second steps or up to 9.9 seconds in 0.1 second steps. A time/focus switch turns the safelight off when focusing and printing. Repeatable exposure with 2% accuracy.

Kit PT-15, Shpg. wt. 4 lbs. **36.95**



No moving parts — high accuracy **$36.95**

Find out how easy it is to build a kit — order the manual. See page 49.

Build MORE FUN into your boating with

These useful accessories will assure you of



Heathkit Digital Depth Sounder

$149.95

Prevents running aground — lets you know depth of water below you from 2-199 ft.

Accurate depth readings at a glance. Dual-range digital display automatically reads depth in 0.1 foot increments from 2.5 to 19.9 feet and in 1 foot increments from 20 to 199 feet. A red light signals clearance of 10 feet or less. A single knob controls power on/off and brightness of the readout digits. Regulated power supply maintains accuracy over wide range of DC voltages. Cycolac® case; gimbal mounting bracket; 15 feet cable for through-hull installation, 25 feet for transom mount.

Kit MI-101-1, With through-hull transducer,
Shpg. wt. 7 lbs. **149.95**

Kit MI-101-2, With high speed transom transducer,
Shpg. wt. 6 lbs. **149.95**

MI-101 SPECIFICATIONS

Sounding frequency: 200 kHz. **Sounding rate:** Maximum of 11/sec. on both ranges for a total of 22/sec. Normal rate of approx. 1/sec. **Accuracy:** ±2%, ±1 digit. **Current drain:** 300-500 mA. **Power requirements:** 10-17 VDC @ 500 mA. **Transducer:** Barium titanate ceramic element encased in splashproof housing. **Dimensions:** 2¼" H x 6⅝" W x 8½" D (less gimbal hardware).

Heathkit Dual-Range Depth Sounder

$99.95

Switch selected 0-60 ft. and 0-240 ft. readings for extra accuracy and precision.

Shows depth, type of bottom, even schools and individual fish, submerged objects. A high-pitched "beep" alerts you to shoals or objects projecting above any preselected depth from 5 to 240 ft.

Electronically controlled silent-running motor; fixed noise rejection circuit to eliminate ignition interference; diode protection against accidental polarity reversal. Water-resistant Cycolac® cabinet has a glare-free bezel and integral sun shield. Super-bright neon indicator light stands out even in bright sunlight. The gimbal mount and quick-disconnect power and transducer leads allow for easy removal when your boat is not in use. Kit goes together easily in about four evenings.

Kit MI-1031-1, sounder with thru-hull transducer & 15′ cord,
Shpg. wt. 8 lbs. **99.95**

Kit MI-1031-2, sounder with transom transducer & 25′ cord,
Shpg. wt. 7 lbs. **99.95**

MI-1031 SPECIFICATIONS

Frequency: approx. 200 kHz. **Accuracy:** Within 2% of actual depth. **Transducer:** Barium titanate ceramic element encased in splashproof housing. **Power requirements:** 0-60′ range, 225 mA @ 11-15 VDC; 0-240′ range, 125 mA 11-15 VDC with one return pulse. **Dimensions:** 6½" H x 5¾" W x 7¼" D.

Make your presence known with this 4-function Foghorn/Hailer



$99.95

Combines a foghorn, hailer, boathorn and intercom in a single, inexpensive package.

The Heathkit MD-19A features a husky 55-watt amplifier; foghorn rate and duration controls; separate "listen" & "hail" gain controls; optional remote speaker for ship's intercom use. Kit is easy to assemble, and includes low-profile weather-resistant deck horn, 20 ft. speaker cable, gimbal mount. Styled in marine white with blue trim. Operates on your ship's 12 VDC power system, positive or negative ground.

Kit MD-19A, with horn speaker,
Shpg. wt. 15 lbs. **99.95**

Kit MDA-19-1, remote speaker,
Shpg. wt. 2 lbs. **11.95**

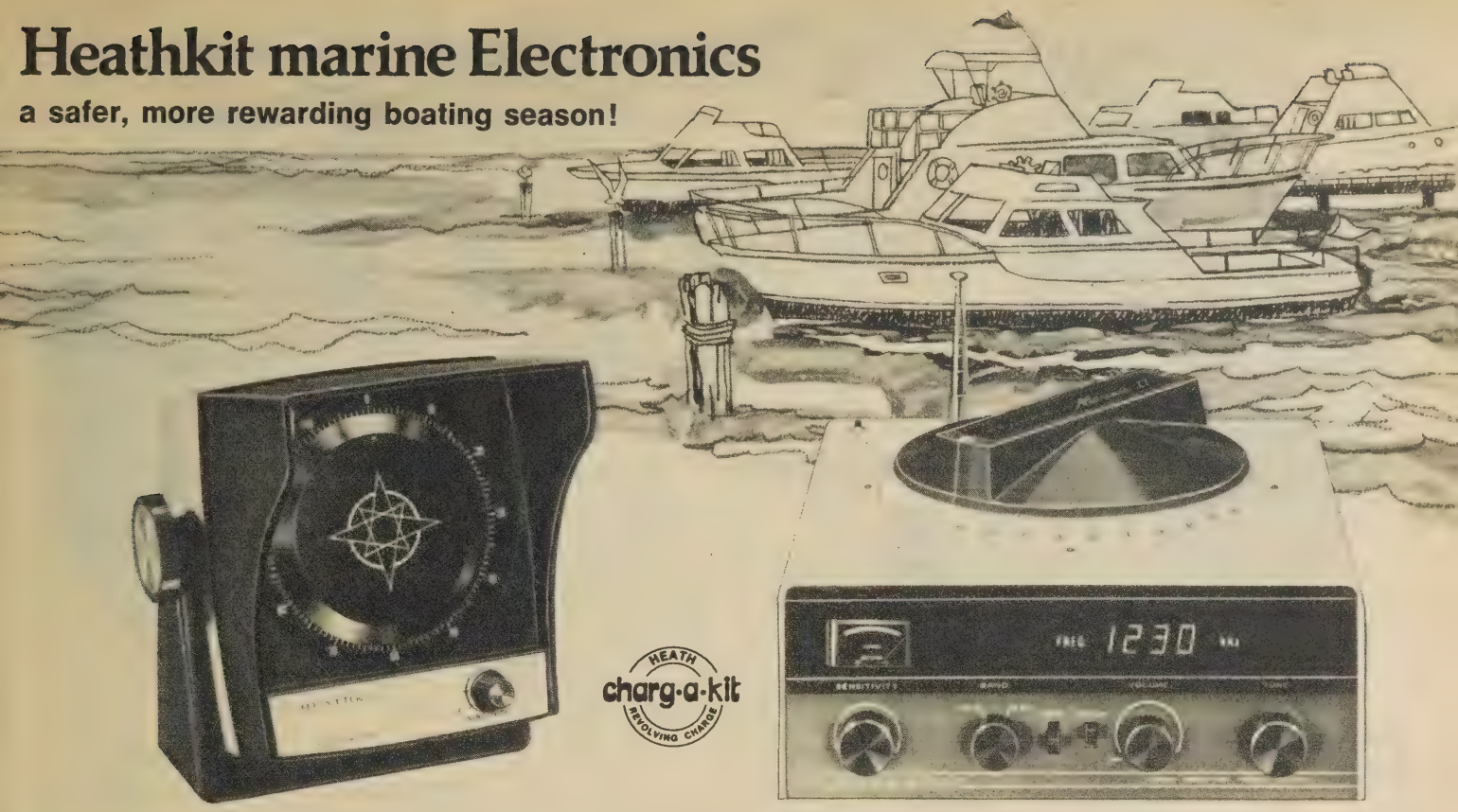
MD-19A SPECIFICATIONS

Boathorn frequency: Approx. 530 Hz. **Foghorn frequency:** Approx. 390 Hz. **Foghorn rate:** Approx. 2-90 sec., variable. **Foghorn duration:** Approx. 2-20 sec., variable. **Microphone:** Ceramic with push-to-talk switch. **Power requirements:** 12 VDC nominal, 4.5 A max. **Dimensions:** 4¾" H x 9¾" W x 9¼" D. **Color:** White wrinkle and dark blue.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Heathkit marine Electronics

a safer, more rewarding boating season!



HEATH charg-a-kit REVOLVING CHARGE

Heathkit economy Depth Sounder

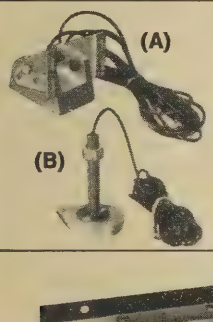
$69.95

Has the same advanced circuit as the MI-1031, but with single range (to 240 ft.), no alarm.

Same features as MI-1031, but single range and no alarm.

Kit MI-1030-1, sounder with thru-hull transducer & 15′ cord, Shpg. wt. 8 lbs. **69.95**

Kit MI-1030-2, sounder with transom transducer & 25′ cord, Shpg. wt. 7 lbs. **69.95**



Your Choice of Transducers

These depth sounders are available with either through-the-hull or transom-mount transducers. The transom mount unit (A) is recommended for high-speed craft with planing hulls. The through-the-hull transducer (B) is ideal for a permanent mount on large boats with displacement hulls.

Heathkit Digital Radio/Direction Finder

Originally $239.95

NEW LOW PRICE! $199.95

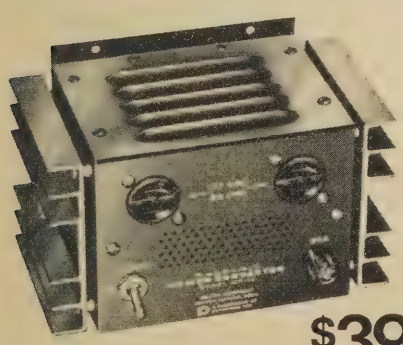
Digital readout pinpoints AM or beacon stations — no more waiting for station identification.

Find your way with the versatile Heathkit MR-1010! It keeps you informed on the 190-410 kHz LW band and standard AM. It identifies stations with a digital frequency readout, and gives you a heading from its big easy-read azimuth ring marked in 2° increments! Has excellent sensitivity, lighted meter for accurate null indications, telescoping sense antenna for an impressive bearing accuracy of ±3°. Operates from your boat's 12 VDC system, or its own built-in power source (6 "D" cells, not included). Battery-saver display cuts off after 20 seconds, can be recalled instantly.

Kit MR-1010, Shpg. wt. 14 lbs. **199.95**

MR-1010 SPECIFICATIONS

Bands: 190-410 kHz (LW); 535-1605 kHz (AM). Sensitivity: Typically 30 μV/m (LW) for 10 dB S+N/N. IF Frequency: 453 kHz. Selectivity (6 dB points): 3 kHz (LW); 5 kHz (AM). Readout Accuracy: ±2 kHz. Audio Output: 1 watt. Speaker: built-in 3x5″. Current Drain: 450 mA (with display & meter); 140 mA (meter only); 30 mA (radio at typical listening level). Dimensions: 7¼″ H x 11½″ W x 12″ D.



$39.95

Economy power inverter

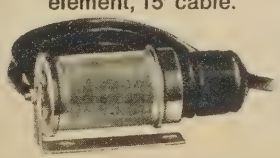
Operates many small appliances from 12-volt input. Supplies 117 VAC square wave, up to 175 watts continuous. Not for equipment with high starting current or sine wave AC. 25-amp fuse.

Kit MP-10, Shpg. wt. 8 lbs. **39.95**

Heathkit Fuel Vapor Detector...detects deadly gas fumes in your bilge



With enclosed sensing element, 15′ cable.



$74.95

An important safety accessory for EVERY powered craft!

Gives a meter indication of safe-dangerous — explosive conditions in your bilge, sounds an audible alarm when gasoline fumes are present. Solid-state circuit has fail-safe provision that triggers alarm should any component fail. Built-in relay circuits control bilge blower or additional warning devices.

Kit MI-25, Shpg. wt. 3 lbs. **74.95**

MI-25 SPECIFICATIONS

Voltage: 12 VDC, ±10%. Current: 1.0 A nominal. Panel size: 2 1/16″ H x 5 1/16″ W. Depth: 5″. Detector head size: 1½″ round x 2½″ long. Length of interconnecting cable supplied: 15′. Color: Marine white & black. Material: Aluminum. Temp. range: —30°C. Audio alarm: 2500 Hz.

Charge a kit — no money down on any kit — see page 50 for details.

Winning Anglers Demand Heathkit Gear



Heathkit Dual-Range Spotter sounds off when they're below

$99.95

All solid-state circuitry for improved sensitivity, dependability and minimum battery drain

The Heathkit MI-2901 Fish Spotter® Sounder has adjustable audible alarm you set to sound off at any depth to 240 ft. Fish swimming between surface and preset depth will trigger alarm. *Includes two switch-selected ranges* (0-60′ and 0-240′) for sharper definition; bright neon-flasher for precise depth reading; noise rejection circuitry to eliminate engine ignition interference. Rugged aluminum cabinet. The transducer features a barium titinate ceramic element encased in a durable waterproof housing for good protection. Portable suction-cup transducer bracket. Powered by two 6-volt lantern batteries (not supplied).

Kit MI-2901, Shpg. wt. 9 lbs. **99.95**
Kit MIA-2900-1, Scanning Transducer Bracket, Shpg. wt. 4 lbs. **19.95**

$19.95

Heathkit Scanning Transducer Bracket

Designed for use with Heathkit MI-2901 and MI-2900 Fish Spotter® sounders. "C" clamp mounting. Scans 360°, locks in any position. Accepts any 1⅜″ cylindrical transducers. **Kit MIA-2900-1,** Shpg. wt. 4 lbs. **19.95**

MI-2901 SPECIFICATIONS

Accuracy: ±2% with motor speed of 2400 rpm in the 0-60′ range and with motor speed of 600 rpm in the 0-240′ range. **Sounding Rate:** 40 times per second on the 0-60′ range. 10 times per second on the 0-240′ range. **Frequency:** 200 kHz, ±5%. **Noise Rejection:** Fixed at approximately 500 microseconds integration time. **Receiver Sensitivity:** 75 μV nominal at 200 kHz. **Depth Indication:** Neon lamp flashes at zero and again at the indicated depth from the object. **Alarm:** 5-59′ on the 0-60′ range. 5-239′ on the 0-240′ range. **Transducer Cable Length:** 15′. **Power Requirements:** 12 VDC. **Dimensions: (Less Handle):** 7″ H x 6″ W x 11″ D.

MI-2900 SPECIFICATIONS

Accuracy: ±2% @ 240 rpm. **Sounding Rate:** 20 times per second. **Frequency:** 200 kHz ±5%. **Noise Rejection:** Fixed at approximately 500 microseconds integration time. **Receiver Sensitivity:** 75 μV nominal at 200 kHz. **Transducer:** Barium titanate ceramic element encased in a durable waterproof housing. **Transducer Cable Length:** 15′. **Power Requirements:** 12 VDC, 2 6V lantern batteries. **Dimensions:** 7″ H x 6″ W x 11″ D.

The Economy Fish Spotter® Sounder gives you professional tackle for less

$69.95

Simplified circuit design makes assembly easy

The Heathkit MI-2900 Fish Spotter® Sounder should be standard tackle for any serious angler. It finds individual and schools of fish to depths of 240 ft.; and it will stand duty as a reliable depth sounder on any cruise. Solid-state circuitry assures you of accuracy, dependability and minimal battery drain. Noise-rejection circuitry eliminates ignition interference. Improved disk and slip-ring assembly for quieter operation. Has on-off sensitivity control. Bright neon indicator lamp that won't wash out, even in direct sunlight. Portable suction-cup transducer mount, or order scanning transducer mount, below. Powered by 2 6-volt lantern batteries (not supplied).

Kit MI-2900, Shpg. wt. 8 lbs. **69.95**
Kit MIA-2900-1, Scanning Transducer Bracket, Shpg. wt. 4 lbs. **19.95**

The Thermo Spotter® thermometer finds the depth where your fish feed



$27.95

Completely self-contained with submersible sensing element on a 100-ft. cable. Battery-powered meter circuitry in high-impact plastic take-up reel case. Simply lower the line, press spring-loaded meter button for temp. readout, check depth on cable. Kit includes operations manual with fish temp. preference charts. Uses 1.5-volt penlight battery (not supplied).

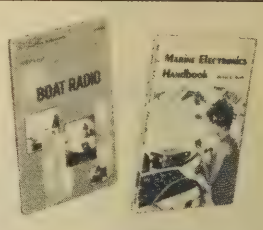
Kit MI-104, Shpg. wt. 2 lbs. **27.95**

MI-104 SPECIFICATIONS

ELECTRICAL: Circuit: Bridge type with thermistor sensor in one arm. **Indicator:** 50μA meter. **Temperature scale:** 32°-86°F. (0°-30°C). **Accuracy:** within ±3°F. **Current drain:** Less than 3 mA when in use. **Battery:** Size AA penlight cell NEDA 15. **PHYSICAL: Case:** Molded high-impact plastic. **Cable length:** 100 ft. **Reeling speed:** 1 ft. per turn (approx.). **Dimensions:** 10¼″ x 5¾″ x 3¼″.

FISH TEMPERATURE PREFERENCE CHART

Species	Range	Pref.
Alewife	48-72	54
Bluegill	64-72	69
Brook Trout	48-64	58
Brown Trout	50-65	60
Chinook Salmon	44-58	54
Coho Salmon	44-58	54
Crappie	65-74	71
Lake Trout	44-53	51
Largemouth Bass	60-76	73
Muskellunge	55-72	63
Northern Pike	55-74	66
Rainbow Trout	50-65	60
Smallmouth Bass	60-73	68
Smelt	43-56	50
Walleye	55-74	67
Yellow Perch	58-73	68



Handy Boating Books

Marine Electronics Handbook — covers radios, codes, antennas, direction finders; clearly written. **EDP-134** **4.95**

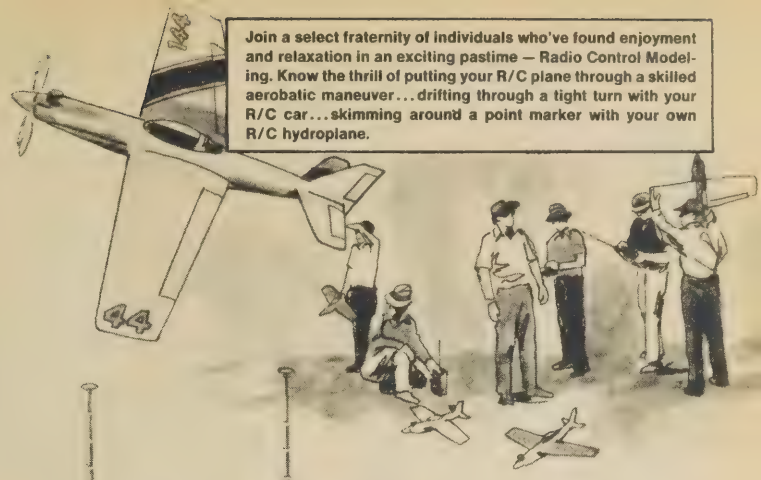
Easi-Guide to Boat Radio — how to select, install & maintain a boat radio; FCC rules governing marine radio; a real asset to boating safety. **EDP-133** **3.50**

See page 48 for book-ordering information

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit R/C gets you up and away from the crowd!

Join a select fraternity of individuals who've found enjoyment and relaxation in an exciting pastime — Radio Control Modeling. Know the thrill of putting your R/C plane through a skilled aerobatic maneuver...drifting through a tight turn with your R/C car...skimming around a point marker with your own R/C hydroplane.



SAVE UP TO $61.80 on Heath's R/C System Spring Specials!

Order a complete system from specials below and save like never before!

Budget-priced 3-ch/4-ch R/C systems

Here's R/C versatility at its best. The basic 3-channel system converts to 4 channels whenever you're ready. The 3-channel transmitter comes with a 2-axis stick assembly. The conversion pack (below) lets you go four channels by putting 3 channels on the stick with the fourth channel controlled by a convenient thumb tab.

Top-flight features include all nickel-cadmium battery packs with external charging unit, vinyl-covered front panel, telescoping whip antenna, and relative power output meter that doubles as a battery charging indicator. The compact 3-channel Receiver has molded nylon case and connector block for servos and receiver battery pack. It's compatible with all Heathkit servos, and the conversion kit converts it to 4-channel also.

SPECIFY FREQUENCY WHEN ORDERING

Kit GDA-1057-1, 3-channel transmitter, Shpg. wt. 4 lbs. **84.95**
Kit GDA-1057-4, 4-channel conversion pack for both transmitter and receiver, Shpg. wt. 1 lb. **21.95**
Kit GDA-1057-2, 3-channel receiver, Shpg. wt. 1 lb. **36.95**
Kit GDA-1205-3, Receiver battery pack, Shpg. wt. 1 lb. **9.95**
Kit GDA-19-4, standard servo, Shpg. wt. 1 lb. **21.95**
Kit GDA-405-44, miniature servo, Shpg. wt. 1 lb. **29.95**
Kit GDA-505-44, sub-miniature servo, Shpg. wt. 1 lb. **29.95**

GDA-1057-1 SPECIFICATIONS

TRANSMITTER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz bands. **Operating Temperature:** 0°-160°F. **Controls:** 3 channels (two with trim); ON-OFF switch. Optional fourth channel. **Power Supply:** Internal 9.6V, 500 mA hours, nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 50 mA from external charger. **Frequencies Available:** 27 MHz (11 meters) — 26.995, 27.045, 27.095, 27.145 & 27.195. 53 MHz (6 meters) — 53.100, 53.200, 53.300, 53.400, 53.500. 72 MHz (4 meters)for R/C planes only — 72.080, 72.240, 72.400, 75.640. (All Models) — 72.160, 72.320, 72.960. **Dimensions:** 9½" H x 3 11/16" W x 2¼" D.

GDA-1057-2 SPECIFICATIONS

RECEIVER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz, 72 MHz. **Operating Temperature:** 0°-160°F. **Power Supply:** 4.8V; Battery Pack GDA-405-3. **Dimensions:** 1 3/32" H x 1 3/16" W x 2 17/64" D. **Net Receiver Weight:** 2.5 oz. **Servo Channels:** 3 (4 with option). **GENERAL** — Complete airborne system weight: with GDA-505-44 servos: 8.8 ozs.

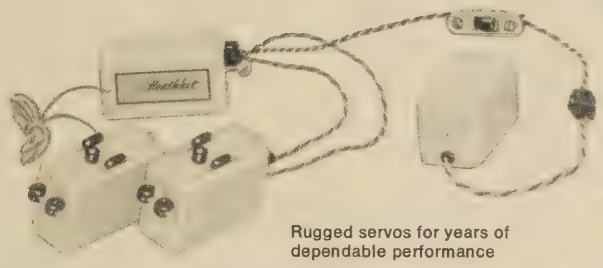


Systems include rechargeable batteries worth over $30

Complete systems as low as $119.95

3-Channel System with 4th Channel option installed

3-Channel System



Rugged servos for years of dependable performance

Heath R/C System Spring Specials!

3-Chnl. Trans., Rec., Rec. Batt. Pk., 2 GDA-19-4 Servos, Shpg. wt. 9 lbs. **119.95**
(If purchased separately, 175.75.) **SAVE 55.80!**

3-Chnl. Trans., Rec., Rec. Batt. Pk., 2 GDA-405-44 Servos, Shpg. wt. 9 lbs. **129.95**
(If purchased separately, 191.75.) **SAVE 61.80!**

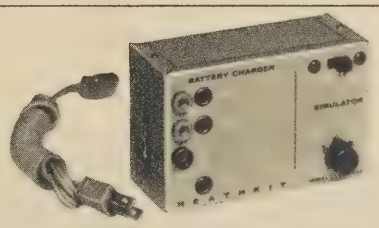
3-Chnl. Trans., Rec., Rec. Batt. Pk., 2 GDA-505-44 Servos, Shpg. wt. 9 lbs. **129.95**
(If purchased separately, 191.75.) **SAVE 61.80!**



Heathkit Thumb® Tach peaks engine performance

Measures model engine rpm without physical connection to engine. Two ranges — 0-5000 and 0-25,000. Perfect solution to needle valve adjustment, selection of glow plugs, gears and props.

Kit GD-69, Shpg. wt. 2 lbs. ...**24.95**



Heathkit Servo Simulator for easy servo adjustment

Takes the place of both transmitter and receiver for making adjustments on all Heathkit servos, and a wide variety of others. Operates servos from 120 VAC line or from the optional internal battery pack. Charges receiver and glo-plug batteries when plugged into 120 VAC. Bulb shows battery condition. Kit includes adaptor cable for Heathkit GD-405 series servos.

Kit GD-1053, Shpg. wt. 3 lbs. **24.95**
Kit GDA-19-3, optional battery pack, Shpg. wt. 1 lb. **4.95**

Servo Centering Standard



Calibrates all Heath servos with variable pots to the 1.4 millisecond pulse width standard. Eliminates recentering when you switch from one transmitter or receiver to another. Included in all Pack-17 transmitters!

Kit GD-1189, Shpg. wt. 1 lb. **9.95**

Heathkit R/C Maintenance Manual

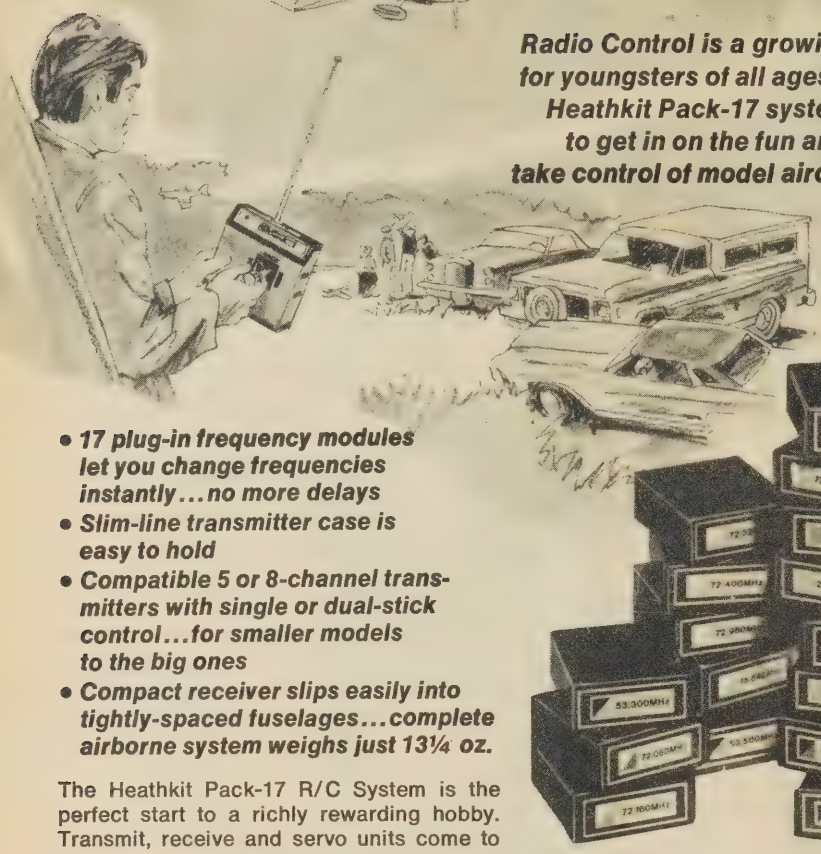


Comprehensive, detailed information on the use and maintenance of Heathkit R/C gear. Shows you how to get the most from your R/C gear. Helpful hints for owners of non-Heath R/C gear too. **GDA-1205-7. . 1.00**

See page 48 for book ordering information

Heathkit Pack-17™ R/C Systems put

Radio Control is a growing, fun-filled hobby for youngsters of all ages — and building the Heathkit Pack-17 system is the best way to get in on the fun and excitement — take control of model aircraft, boats and cars.





- ***17 plug-in frequency modules let you change frequencies instantly...no more delays***
- ***Slim-line transmitter case is easy to hold***
- ***Compatible 5 or 8-channel transmitters with single or dual-stick control...for smaller models to the big ones***
- ***Compact receiver slips easily into tightly-spaced fuselages...complete airborne system weighs just 13¼ oz.***

FIVE-PACK SPECIAL!—SAVE $20
Choose five transmit and receive frequency modules — specify frequencies.
only $129.50
If bought separately, $149.50

The Heathkit Pack-17 R/C System is the perfect start to a richly rewarding hobby. Transmit, receive and servo units come to you in easy-to-assemble kit form...so you know your equipment when it's time to start operating. Heathkit R/C Systems have the rugged reliability serious R/Cer's want...tough glass epoxy circuit boards; reinforced transmitter cases with scuff-resistant brown vinyl covering; servos with heavy-duty gears and built-to-take-it cases.

5-Channel Dual-Stick Transmitter & 1 module. 2-stick control of 4 channels, plus 1 aux. channel.
Kit GDA-505-D, Shpg. wt. 6 lbs. **129.95**

5-Channel Single-Stick Transmitter & 1 module. 1-hand control of 3 channels (2 through gimbal couplings & 1 with return-to-center-knob), throttle control with trim & 1 aux. channel.
Kit GDA-505-S, Shpg. wt. 5 lbs. **139.95**

8-Channel Dual-Stick Transmitter & 1 module. Same as GDA-505-D, plus landing gear switch & 2 additional channels.
Kit GDA-1205-D, Shpg. wt. 6 lbs. **139.95**

8-Channel Single-Stick Transmitter & 1 module. Same as GDA-505-S, plus landing gear switch & 2 additional channels.
Kit GDA-1205-S, Shpg. wt. 5 lbs. **159.95**

Receiver & 1 module (less batteries).
Kit GDA-1205-2, Shpg. wt.. 1 lb. **59.95**

Receiver battery pack.
Kit GDA-1205-3, Shpg. wt.. 1 lb. **9.95**

Additional Frequency Modules

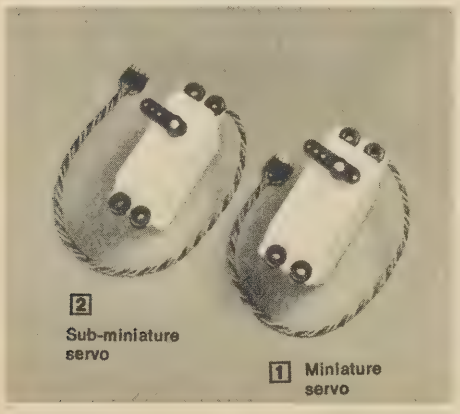
When ordering specify frequency desired (see list below).
Transmit Module, Shpg. wt. 1 lb. **17.95**
Receive Module, Shpg. wt. 1 lb. **11.95**
FREQUENCIES AVAILABLE (MHz): 26.995, 27.045, 27.095, 27.145, 27.195, 53.1, 53.2, 53.3, 53.4, 53.5, 72.08, 72.24, 72.16, 72.32, 72.40, 72.96, 75.640 MHz. (When ordering, specify transmit or receive.)

GDA-1205 AND GDA 505 SERIES SPECIFICATIONS

TRANS. — RF Frequency: crystal controlled, all bands. Frequency stability: within ±.005% on 27 MHz; within ±.002% 53 MHz and 72 MHz. Temp. Range: 0 to 160°F. RF Output Circuit: pi network. RF Input Power: at least 500 mW. Modulation: on-off carrier keying. Approx. Current Drain: 100 mA on all bands. Controls: GDA-1205, 8 channels (4 with trim), on/off, trainer button; GDA-505, 5 channels (4 with trim), on/off switch, trainer button. Power Supply: Internal 9.6V 500 mAH Ni-Cad. battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120 volt power line. Dimensions: 7" H x 7" W x 2" D. Net Weight: 2½ lbs., with battery.

GDA-1205-2 SPECIFICATIONS

RECEIVER — Local Oscillator Operating Frequency: crystal-controlled, all bands. Temperature Range: 0 to +160°F. Sensitivity: 5 μV or better. Selectivity: 6 dB down at ±4 kHz; 30 dB down at ±9 kHz. Current Drain: 10 mA. Intermediate Frequency: 453 kHz. Power Supply: 4.8 V battery pack (GDA-1205-3). Controls: On/off switch. Dimensions: 1 5/32" H x 1 3/16" W x 2 17/64" D. Net Weight: 2 ozs.



Low-cost servos with tough cases and heavy gearing

1 Miniature Servo. For use with GD-1205 and 505 systems only.
Kit GDA-1205-4, Shpg. wt. 1 lb. **29.95**

GDA-1205-4 SPECIFICATIONS

Input Signal: Pulse 1-2 msec. wide, 4 V P-P. Thrusts: 4 lbs. min. at rotor. Travel Time: 0.5 sec. Rotary Output Travel: 90° rotation. Temperature Range: 0°-160°F. Power Requirements: Battery — 4.8 VDC. Idle current — 15 mA. Stall current — 450 mA; no load current, 80 mA. Gear Train Backlash: Less than .002". Mechanical Output: 1 rotary arm, 1 rotary wheel. Position Accuracy: 1.0%. Dimensions: 1 5/8" H. x 15/16" W. x 2 3/32" L. (length includes mounting ears; height includes outputs). Net Weight: 1.75 ozs.

2 Sub-Miniature Servo. For use with GD-1205 and 505 systems only.
Kit GDA-1205-5, Shpg. wt. 1 lb. **29.95**

GDA-1205-5 SPECIFICATIONS

Input Signal: Pulse 1-2 msec. wide, 4 V P-P. Thrust: 4 lbs. min. at rotor. Travel Time: 0.5 sec. Rotary Output Travel: 90° rotation. Temperature Range: 0°-160°F. Power Requirements: Battery — 4.8 VDC. Idle current, 15 mA maximum. Stall current, 450 mA nominal; no load current, 80 mA. Mechanical Output: 1 large rotary arm, 1 small rotary arm, 1 offset rotary arm, 1 rotary wheel. Position Accuracy: 1.0%. Dimensions: 1 11/16" H. x ¾" W. x 2 3/32" L. (length includes mounting ears, height includes the outputs.) Net Weight: 1.25 ozs.

Charge a kit — no money down on any kit — see page 50 for details.

R/C "power" in your hands...save you money too!

SAVE! ON FLEXIBLE 5-CHANNEL SYSTEMS

5-channel Dual Stick Transmitter GDA-505D



5-channel Single Stick Transmitter GDA-505S

SAVE! ON RELIABLE 8-CHANNEL SYSTEMS

8-channel Dual Stick Transmitter GDA-1205D



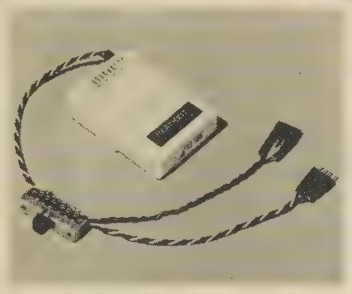
8-channel Single Stick Transmitter GDA-1205S



A Heath exclusive — plug-in transmitter modules let you pick any of 17 frequencies. And you can add new modules any time. You'll probably never have to wait for a frequency to open up when you go to the flying field!



Easy to build and service. The hinged transmitter circuit board folds out for easy access. The chassis layout is exceptionally open and uncluttered. A factory-fabricated wiring harness greatly simplifies assembly.



Low current drain. The new lightweight receiver draws less than 10 mA from its optional rechargeable nickel-cadmium batteries. A convenient plug on the on/off switch lets you recharge the battery without unplugging it from the receiver.



Lightweight receiver maintains the same outstanding performance with any of the 17 plug-in frequency modules. Since full-house and 8-channel systems use the same receiver, it's easy to change from 5 to 8 channels whenever you're ready.

SAVE on Heathkit R/C Systems!

5-Chnl. Dual-Stick Syst. SAVE $44.70

- GDA-505-D Trans. & 1 module
- GDA-1205-2 Rec. & 1 module
- GDA-1205-3 Rec. Batt. Pk.
- 4 GDA-1205-4 or GDA-1205-5 Servos (or any combo totalling 4). (Shpg. wt. 19 lbs.)

If pur. sep. 319.65

System Price 274.95

5-Chnl. Single-Stick Syst.

- GDA-505-S Trans. & 1 module
- GDA-1205-2 Rec. & 1 module
- GDA-1205-3 Rec. Batt. Pk.
- 4 GDA-1205-4 or GDA-1205-5 Servos (or any combo totalling 4). (Shpg. wt. 19 lbs.)

If pur. sep. 329.65

System Price 284.95

8-Chnl. Dual-Stick Syst. SAVE $49.60

- GDA-1205-D Trans. & 2 modules
- GDA-1205-2 Rec. & 2 modules
- GDA-1205-3 Rec. Batt. Pk.
- 4 GDA-1205-4 or 1205-5 Servos (or any combo totalling 4). (Shpg. wt. 19 lbs.)

If pur. sep. 359.55

System Price 309.95

8-Chnl. Single-Stick Syst.

- GDA-1205-S Trans. & 2 modules
- GDA-1205-2 Rec. & 2 modules
- GDA-1205-3 Rec. Batt. Pk.
- 4 GDA-1205-4 or 1205-5 Servos (or any combo totalling 4). (Shpg. wt. 18 lbs.)

If pur. sep. 379.55

System Price 329.95

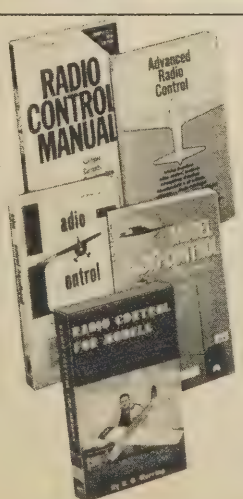
Please specify frequency when ordering R/C transmitters and/or receivers. All systems include batteries — a value worth up to $39!



Trainer link accessory. Six-foot coiled cord connects two GDA-1205 or 505 Transmitters for in-flight instruction... makes one unit "master" with override capability...the other, a "slave."

GDA-1205-6, Shpg. wt. 1 lb. 9.95

Learn more about your R/C hobby



Radio Control Manual — guide to systems & circuits from simple 1 & 2 channel types to digital & pulse code designs. **EDP-157** . . 4.95

Advanced Radio Control — "how-to" book for planes, boats, robots, trucks, tractors, autos — introduction to automation in rockets & robots at the hobby level. **EDP-158** 4.95

Radio Control Handbook — covers entire range of control systems. **EDP-159** 6.95

Model Radio Control — concepts of building simple control projects in R/C. **EDP-160** 4.95

NEW! Radio Control for Models! Up-to-date handbook for planes, cars and boats. Emphasis on solid-state step and proportional controllers. **EDP-219** 6.95

See page 48 for book ordering information

Famous Hobie Hawk Specially Priced at Heath



New

Heath Low Price $89.95 Kit

Heath Low Price $134.95 Semi-Kit

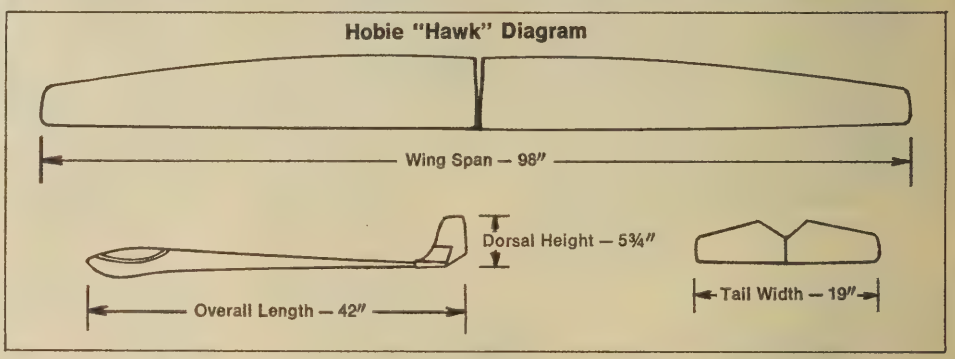
- ***Great for use with Heathkit 3-Channel Radio Control Systems (page 21)***
- ***Rugged cross-linked polyethylene Nose Cone***
- ***Precision two-point control for smooth turning and lifting***

Build and fly the Hobie Hawk and you'll find out what the excitement of R/C is all about. Has strong 1/32" plywood main wing sheeting; 1/64" plywood stabilizer sheeting; ABS plastic root rib and tips. The wing span is a full 98" for excellent soaring and graceful turning; the 590 sq. in. wing area provides plenty of lift to get you up and going! Kit includes all parts and hardware needed for complete construction, you use your own covering materials and paints to "custom design" the Hawk to your preference. The Hobie Hawk is ideal for use with Heathkit R/C control systems, especially the 3-channel systems described on page 21. It's a great way to begin a fun-filled R/C hobby.

Kit RP-1206, Shpg. wt. 8 lbs. **89.95**

Semi-Kit RP-1207, just connect wings and tail, add R/C gear, and you're ready to fly. Shpg. wt. 8 lbs. **134.95**

Because of the nature of these two products, the standard Heath warranty does not apply.

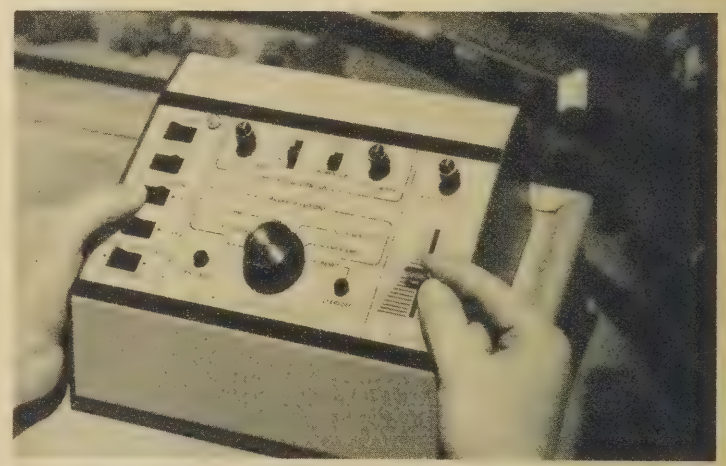


Heathkit Power Supply/Transistorized Throttle

Makes model railroading even more realistic

$79.95

- ***Has controls for pulse width and frequency, starting voltage — provides optimum performance with every engine in your line***
- ***Outputs for main and loop voltages, two sets of accessories***



The Heathkit RP-1065 makes any HO or N-gauge layout dramatically more realistic — and at a low price that'll leave the competition waiting at the station!

For maximum realism, set the mode switch to "momentum". Then just pull the slide-control throttle toward you and watch the engine gradually build up speed just like a real train. Even at a crawl, the RP-1065's sophisticated pulse circuitry assures smooth, realistic acceleration and braking — great for switching. Braking is independent of the throttle and controlled by a five-position knob. "Run" allows the train to gradually gather speed until it reaches the throttle setting. "Release" maintains its speed without accelerating or braking. Momentarily turning the knob to "normal" puts a short "burst of air" on the brakes. "Quick service" and "emergency" brake the train more rapidly, while still maintaining a realistic momentum effect.

Other circuitry solves many common problems. With ordinary power supplies, an engine climbing a grade may slow down or even stop. But the RP-1065 compensates by raising the output voltage. An internal control selects exactly the compensation you want — maintain a constant speed or even precisely simulate the way a real train slows as it climbs, then speeds up as it descends. AC load compensation automatically helps overcome side rod and gear train binding, tight spots in wheel bearings — even tight sections of track!

The RP-1065 easily powers two HO or N-gauge engines. An overload sensor disconnects the output if there is a short circuit or an excessive load, then signals you with a light on the front panel. After correcting the problem, just flip the brake knob to reset. And the protection circuit's built-in time delay prevents false triggering. Another warning light alerts you to breaks in the circuit. Versatile controls let you use the RP-1065 any way you want. The pulses can be used three ways — on continuously, off or automatically. In automatic, the RP-1065 monitors track voltage and switches the pulses on at any preset level. You can even override the momentum effect by switching to the "direct" mode, allowing you to control both acceleration and braking with the throttle. Other features include — starting voltage control, main and loop switches to reverse track polarity instantly, a forward/reverse switch for engine direction and two low-voltage AC accessory outputs, one with front-panel on/off switch.

You can build the RP-1065 easily in just a couple of evenings, even if it's your first kit. There's just one circuit board to wire and a plug-in integrated circuit simplifies construction. 120 VAC. 4¾" x 9½" x 8½".

Kit RP-1065, Shpg. wt. 8 lbs. **79.95**

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit Modulus™—a new era in hi-fi

In performance, features, versatility and styling, the MODULUS™ system is destined to become the standard by which other hi-fi systems will be judged.

See what the experts say!
Read the Modulus review in March Radio Electronics.



The AN-2016 is the "heart"...

Modulus™... designed to give you "total control" of your musical environment. Create exactly the system you want — stereo or 4-channel — with your choice of capability and power. Stereo...use the AN-2016 and either of its matching stereo amplifiers...even use it with our AA-1640 "super-amp"! Discrete 4-channel...use the AN-2016 with two stereo amplifiers. Dolbyized FM...the AD-1504 plug-in Dolby FM module. 4-channel SQ...the AM-1503 SQ module. Discrete disc CD-4 ...the AD-1507 CD-4 module. Each of the components in the Modulus system rivals the finest separate components available, yet they're far more convenient to use. And, because of their modular design, you can change power or add capability when YOU want to, without "black box" adapters and yards of cable!

...of a quality stereo system



The heart of the MODULUS system is the AN-2016 Digital AM/FM Stereo/Quadraphonic Tuner/Preamplifier. It incorporates a superb AM/FM tuner with digital readout, an exceptional stereo/quadraphonic preamplifier, headphone amplifiers, and an unusually versatile control center. In performance, convenience and reliability, we believe the AN-2016 is unmatched.

On either AM or FM, four ½"-tall LED digits display the frequency far more accurately than an ordinary dial, and the AN-2016 displays only those frequencies which are actual broadcast channels. A signal-strength meter helps you fine tune and a center-channel meter accurately locates the point of lowest FM distortion. Scope outputs help align your FM antenna for minimum multipath distortion. The FM interstation muting is fully adjustable and can be switched on or off from the front panel. Finally, the phase-locked loop multiplex demodulator assures excellent stereo separation — over 40 dB at 1000 Hz.



...of a complete 4-channel system

Even the AM section is the finest we've ever offered — dual-gate MOSFET's in the front-end and mixer combine excellent sensitivity with extremely high resistance to overload. A computer-designed 9-pole LC filter maintains outstanding selectivity with absolutely no alignment.

With the introduction of the AN-2016, Heath engineers have reduced distortion and noise to what we believe are completely inaudible levels. Overload distortion is almost non-existent since the AN-2016 reaches full output with a 170 mV signal, yet doesn't overload until the high-level input reaches at least 3 volts!

Our special attention to the phono amplifier has resulted in a design which can drive the preamplifier to full output with as little as 2 mV, yet does not overload until the input reaches 60 mV. This provides a dynamic range of over 94 dB — considerably better than most records. This extra margin minimizes overload distortion — even crescendoes can be heard with excellent definition. And in the softest musical passages, the AN-2016 maintains the same superb definition because hum and noise are 75 dB below a 10 mV input.

A muting circuit in the AN-2016 protects your speakers from power on/off surges. In addition, four lighted level meters constantly monitor the output. The meters feature a wide 40 dB dynamic range, to follow the softest and loudest passages without switching ranges. The meters use "peak-responding" circuitry to display instantaneous peaks as short as a record click, making them extremely useful as overload indicators. The meters are calibrated in both decibels and volts of output, so you can easily see whether the AN-2016 or an associated power amplifier is being driven to clipping.



...of one of the world's finest high-power music systems

The separate bass and treble controls for the front and rear channels utilize Baxandall circuitry. The turnover points for the tone controls have been moved toward the frequency extremes, allowing you to effectively make corrections with a minimum effect on the mid-range. The Tone-Flat button bypasses the tone controls; loudness, high and low filters provide additional versatility.



The AN-2016's FM muting is fully adjustable — you can block out only those stations you consider too noisy for listening. Direct planetary drive tuning is smooth and positive with absolutely no backlash. And, of course, there is a complete range of inputs and outputs — including separate CD-4 and stereo phono inputs and inputs and outputs for a stereo or discrete 4-channel tape recorder — even front-panel dubbing jacks which let you play or record tapes without disturbing the permanent connections.

Panel lighting is functional as well as beautiful. Whenever the AN-2016 is switched on, the four output meters and the legends above the pushbuttons light. The digital display and meters appear only when you are listening to AM or FM. And only the meters you need light — signal-strength for AM; signal-strength and center-tune for FM. The tips of the pushbuttons light when they are pressed in, so you can see exactly what functions are engaged, even from across the room.

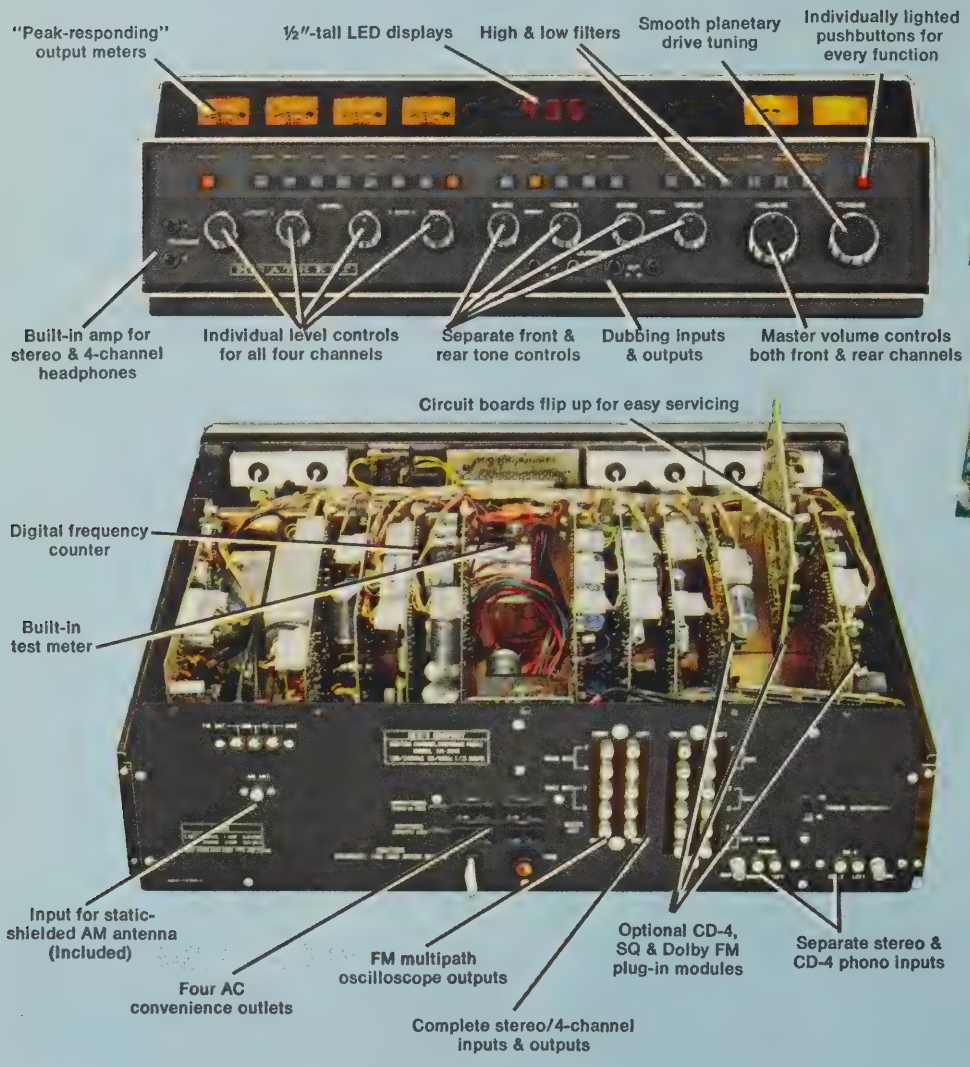
The AN-2016's massive diecast front-panel puts an impressive array of controls at your fingertips — all logically grouped for easy use. And the cabinet is accented by a black textured metal cover and simulated walnut-grained metal end panels. The total impression is tastefully luxurious. Truly, an AN-2016 flanked by its matching amplifiers is an impressive addition to any room.

With 28 IC's, 134 transistors and 55 diodes, obviously some kitbuilding experience would be helpful in assembling the AN-2016. But it is not a difficult kit. Most parts mount on one of the 14 printed circuit boards and 4 wiring harnesses minimize point-to-point wiring. Eight of the boards and the three optional plug-in modules can be flipped up while the AN-2016 is operating, greatly simplifying alignment and servicing. A built-in test meter lets you double-check each circuit board as you finish it.

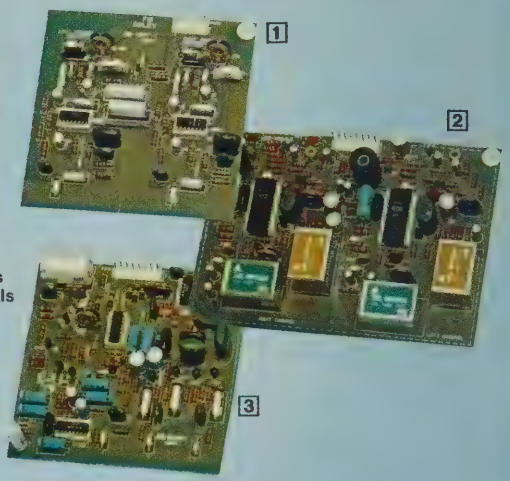
Kit AN-2016, Shpg. wt. 38 lbs. **599.95**

See matching power amplifiers (at right) and modules (below).

Here's why we think the AN-2016 is the world's most versatile control center



Plug-in modules make your AN-2016 more versatile



1 Dolby FM Module

Enjoy the reduced noise and increased dynamic range of specially-encoded 25 μsec. de-emphasis Dolby FM broadcasts. Assemble and install it in less than an evening.

Kit AD-1504, Shpg. wt. 2 lbs. **39.95**

2 CD-4 Demodulator Module

Enjoy the spacious quadraphonic sound of CD-4 discrete 4-channel records. Easy one-evening assembly. Includes calibration record. For use with discrete 4-channel cartridge.

Kit AD-1507, Shpg. wt. 3 lbs. **79.95**

3 SQ Decoder Module

Sophisticated circuitry with full-logic and variable blend enhancement provides excellent quadraphonic separation from matrixed records, tapes and FM. Assemble and install it in just one evening.

Kit AM-1503, Shpg. wt. 1 lb. **49.95**

AN-2016 SPECIFICATIONS

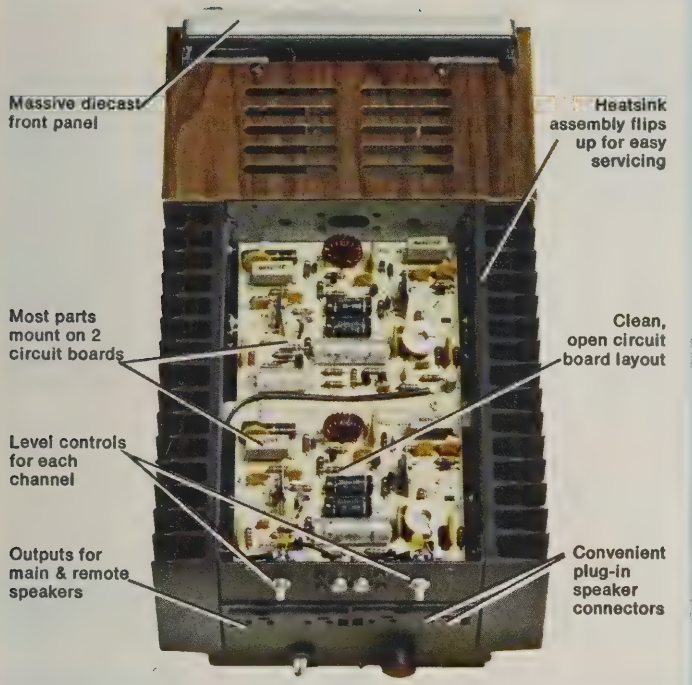
PREAMPLIFIER—Frequency Response: —0.5 dB at 10 Hz and 30 kHz. **Total Harmonic Distortion:** less than 0.05% at 1.5 V into 20K ohms. **IM Distortion:** less than 0.05%. **Hum & Noise (unweighted):** phono, —75 dB ref. to 10 mV; high-level, —80 dB ref. to .25V. **Bass Control:** ±15 dB at 20 Hz nominal. **Treble Control:** ±12 dB at 20 kHz nominal. **Hi Filter:** —3 dB at 7 kHz ±1 kHz, 12 dB/octave slope. **Lo Filter:** —3 dB at 30 Hz ±2 Hz, 12 dB/octave slope. **Input Sensitivity (for 1.5 V output):** phono, 2/6 mV ± 1dB (switch selected). **Phono Equalization:** ±0.5 dB of RIAA standard from 20-20,000 Hz. 100 K ohms shunted by 300 picofarads. **Output Voltage:** 1.5 V RMS. **FM (Monophonic)—Sensitivity:** 1.7 μV (IHF); 3.5 μV for 50 dB S/N. **Signal-to-Noise Ratio:** 68 dB at 1000 μV. **Selectivity:** greater than 100 dB. **Capture Ratio:** 1.3 dB. **Spurious Rejection:** greater than 90 dB. **IF Rejection:** greater than 100 dB. **Image Rejection:** greater than 90 dB. **Total Harmonic Distortion:** 0.3% at 1 kHz. **IM Distortion:** less than 0.1%. **AM Suppression:** 68 dB at 1000 μV. **Antenna Inputs:** 300Ω balanced; 75Ω unbalanced. **—FM (Stereophonic)—Stereo Sensitivity:** 35 μV for 50 dB S/N, 1% THD. **Total Harmonic Distortion:** 1 kHz, .35%. **Stereo Separation:** 40 dB at 1 kHz; 20 dB at 15 kHz. **SCA Rejection:** 65 dB. **— AM —Sensitivity:** 6 μV for 20 dB S+N/N. **Selectivity:** more than 60 dB. **Signal-to-Noise Ratio:** more than 48 dB. **Harmonic Distortion at 1000 μV, 30% mod.:** less than 1.0% at 400 Hz. **Antenna:** external static-shielded loop. **GENERAL—Power Requirement:** 120/240 VAC, 60/50 Hz. **AC Convenience Outlets:** 2 switched , 2 unswitched (500 watts max.). **Dimensions:** approx. 6½" H x 19" W x 14½" D.

"SQ" is a trademark of CBS, Inc.; "Dolby" is a trademark of Dolby Labs and "CD-4" is a trademark of the Japan Victor Company.

Charge a kit — no money down on any kit — see page 50 for details.

Pick the power you need for your MODULUS System

35 Watts (AA-1505) or 60 Watts (AA-1506) minimum rms, per channel into 8 ohms at less than 0.1% total harmonic distortion from 20-20,000 Hz.





Feature-packed power amplifiers... exceptional performance at a budget price

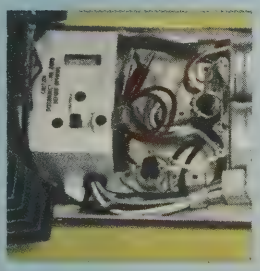
- ***Exciting styling to match the incomparable AN-2016***
- ***Simplified design for easy assembly***

A perfect match for the AN-2016 in styling and performance — and you should also consider using them with most other quality preamps. Just compare the specs — intermodulation distortion is less than 0.1% at full power and drops to a mere 0.05% at 0.1 watt. Frequency response is exceptionally wide and flat — down just 0.5 dB at 8 Hz and 45,000 Hz. And, with a damping factor of over 60, you can count on the AA-1505 and 1506 to provide high definition bass response.

Pushbutton main and remote speaker switching, lighted power button, and Heath's unique polarized speaker connectors which help eliminate phasing problems. Unlike many other power amps — the AA-1505 and 1506 look so good, you'll want people to see them — massive side-mounted black heat sinks and walnut-grained metal side panels. Sophisticated functionalism.

Remarkably easy to build — even for first-time kitbuilders. The two printed circuit boards mount directly on the heat sinks, minimizing point-to-point wiring.

Kit AA-1505, Shpg. wt. 24 lbs. **159.95**
Kit AA-1506, Shpg. wt. 26 lbs. **179.95**



Kit-building convenience you'll appreciate

A built-in test meter lets you check out your work before turning on the amplifier. The circuit board/heat sink assembly can be flipped up or unplugged and removed to simplify trouble-shooting and servicing.

OTHER AA-1506/1505 SPECIFICATIONS

Hum and Noise: 95 dB (referred to rated power, inputs shorted). Separation: 60 dB. Input Sensitivity: 1.5 volts for rated output. Input Impedance: more than 15K ohms. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 8″ W x 5⅜″ H x 14²³⁄₃₂″ D. Net Weight: approx. 21 lbs.

Complete Modulus System — Sensational Performance and Sound at a Money-Saving Price

Save up to $154.89

- ***Heathkit AN-2016 Modulus AM/FM Control Center***
- ***Heathkit AA-1506 Stereo Power Amplifier***
- ***Two Heathkit AS-1373 Speakers***
- ***Dual 1249 Turntable with base and your choice of Empire 2000E/III or Shure M91ED Stereo Cartridge***

If purchased separately, up to $1446.65

Heath Price $1291.76

ARS-110, Shpg. wt. 207 lbs., Exp./Frt. **1291.76**

For a quadraphonic system, order an additional amplifier and pair of speakers. These additional items qualify for the Heath 5% system discount (see page 43) when ordered with the system above.



Declare Your Independence

Heathkit "Superamp" for superior sound

200 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz



Optional meters shown installed

HEATH charg-a-kit REVOLVING CHARGE

$439.95
less meters

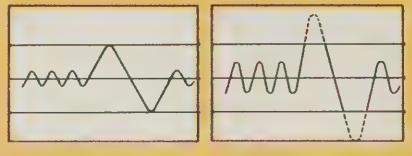
SAVE $19.95
WHEN AMP AND METERS ARE ORDERED TOGETHER

Who needs all that power?

Many hi-fi systems need a "super-amp" like the AA-1640 for good scentific and musical reasons. As sounds become louder, the ear becomes less sensitive. For one sound to seem twice as loud as another (10 dB louder), requires *10 times* as much power. A 3 dB change is barely audible, yet it requires twice as much power.

In an average-sized room, acoustic suspension speakers may require 20 watts per channel to produce a reasonable listening level — about 90 dB. But when a momentary musical peak of 10 dB comes along, your amplifier must try to produce 200 watts per channel. Tone controls, loudness circuits, and equalizers make the same demands.

And if your amp can't deliver that much power, it clips off the peaks as shown.



unclipped clipped

Clipping causes distortion and reduces the dynamic range — the contrast between loud and soft passages. Music sounds constricted, dull and unreal. Clipping also produces harmonics which can actually damage your tweeters.

A high power amplifier can make a big difference. Its wider dynamic range lets more of the live-performance realism come through loud and clear. Perhaps the most striking difference you'll hear is the improved definition of music...solid bass free of "boom" and distinct note for note...accurate treble clearly defined and open.

If your music system uses low-efficiency acoustic suspension speakers, only a superamp like the Heathkit AA-1640 can help them deliver their finest sound.

Heathkit AA-1640 — one of the world's finest stereo power amplifiers. It helps your system sound its best.

In sheer power and exceptionally low distortion, the Heathkit AA-1640 is an extraordinary amplifier. As Julian Hirsch said in the May issue of *Stereo Review:* "The electrical performance of the Heath AA-1640 makes comment superfluous. In every respect it ranks with the finest high-power amplifiers on the market. We were constantly impressed with the conservatism of its construction and ratings." That's quite a tribute to the AA-1640's performance.

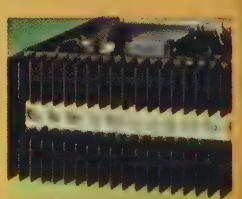
Despite its enormous power, the AA-1640 is also an exceptionally quiet amplifier. Hum and noise are an inaudible 100 dB below full output, so you can hear music over a velvety background of silence. And you can enjoy all that quiet because there's no noisy fan. Even if it is used as a PA amplifier, the AA-1640 requires only normal ventilation and that kind of rugged, conservative design pays off in increased reliability.

Automatic circuitry helps protect your speakers. A 10-second delay protects your speakers from turn-on thumps and instantly disconnects them when you turn the power off. This delay circuit also disconnects the speakers if it detects DC or extremely low-frequency AC at the outputs. Automatic thermal shutdown helps prevent damage from overheating. Finally, speaker fuses are located in the primary feedback loop — an exclusive Heath design which maintains a high damping factor for excellent bass definition.

The optional peak-responding meters continuously monitor the output, accurately showing how much power is reaching your speakers. The backlighted scales are calibrated from −30 to +3 dB and from 0.2 to 200 watts into 8 ohms. Special circuitry allows them to respond to peaks as short as a record click, making them useful as overload indicators. The meters can be installed when the amplifier is built, or later. However, if you buy the meters at the same time you buy the amplifier, you'll save $19.95.



Optional peak-responding meters are calibrated in both decibels and watts. Order them with the amp and save.



Sixteen output transistors and 12 lbs. of heat-sink assure adequate heat dissipation without noisy fans!

Front-panel controls include pushbutton power on/off, left and right channel gain controls, and LED power and high temperature indicators. Exclusive plug-in speaker connectors simplify hookup and help insure correct speaker phasing.

To appreciate its real quality, the AA-1640 should be used with only the finest preamplifiers such as the Heathkit AP-1615 (facing page) or AN-2016 (see pages 25-26). Hear music as you've never heard it before — add the AA-1640 to your system. It's an experience in superior sound.

Kit AA-1640, less meters,
Shpg. wt. 72 lbs. **439.95**

Kit AAA-1640-1, Output meters only,
Shpg. wt. 3 lbs. **69.95**

Kit AA-1640 & Kit AAA-1640-1,
Shpg. wt. 72 & 3 lbs. **489.95**

OTHER AA-1640 SPECIFICATIONS

Frequency Response: −1 dB, 7 Hz to 50 kHz; −3 dB, 5 Hz to 100 kHz. **Intermodulation Distortion:** less than 0.1% from .25 to 200 watts. **Damping Factor:** greater than 50. **Hum and Noise:** Less than 400 μV or 100 dB below full output. **Channel Separation:** 50 dB, min. **Input Impedance:** 50k ohms, min. **Input Sensitivity:** 1.5 V. **Net Weight:** 58 lbs. **Dimensions:** 19" Wx7¼" Hx18" D. **Power Requirement:** 120/240 VAC, 60/50 Hz.

Charge a kit — no money down on any kit — see page 50 for details.

NEW Heathkit Stereo Preamp and Equalizer

[1] AP-1615 Stereo Preamplifier

A truly outstanding preamplifier with performance and specifications comparable to units costing twice or even three times as much.

$129.95



$119.95

[2] AD-1305 Audio Equalizer

Use with the AP-1615 or any quality component with tape monitor input for accurate and complete tone control versatility.

[1] Heathkit AP-1615 Stereo Preamplifier/Control Center

The new Heathkit AP-1615 Stereo Preamplifier offers the kind of specifications and features normally found on preamps costing much more. While it can be used with any high quality power amplifier, it's a perfect match for the AA-1640 "Superamp".

Harmonic and IM distortion are insignificant, less than 0.05%. Hum and noise are an extremely quiet —65 dB on phono and —85 dB on high-level sources; frequency response is a ruler-flat +0, —0.2 dB from 20-20,000 Hz. The extremely wide dynamic range of the AP-1615, 100 dB for all inputs, means that even the loudest and most complex musical passages come through with minimum distortion. In fact, the sound quality of the AP-1615 is limited only by the quality of the associated equipment and the program source.

As a "flat response" stereo preamplifier, the AP-1615 provides outstanding fidelity from any sound source. And, if you need tone controls, the optional AD-1305 (below) offers far more versatility and precise tone adjustment than ordinary bass and treble controls.

Has the features required for a truly superlative stereo system: a relay instantly mutes the output when power is turned on or off to prevent "thumps." A special sub-sonic filter (always on in phono mode) eliminates the noise from turntable rumble, record warp and room vibrations which causes wasted power and IM distortion at the speaker (especially important with high power amplifiers).

Has high-frequency filter, two phono inputs, aux. and tuner inputs, tape monitor, center-detent balance control, mono switch, headphone jack and LED power indicator. Front panel dubbing inputs and outputs for easy temporary recording setups without displacing permanent rear-panel connections.

Handsome styling too, with pewter-anodized front panel, black metal top and solid walnut end panels.

The AP-1615 is an exceptionally easy kit to build. Most parts mount on a single printed circuit board, and point-to-point wiring is kept to a minimum. Even if you're a first-time kit builder, you can build a better preamp than you probably thought you could afford. It's just one more way Heath offers you more for your money.

Kit AP-1615, Shpg. wt. 12 lbs. **129.95**

AP-1615 SPECIFICATIONS

Input Sensitivity: Phono, 2 mV. Hi-Level (Tuner, Tape, Aux., Tape Mon and Tape Dub), 180 mV. **Input Overload:** Phono, over 100 mV. Hi-Level,over 10 V. **Hum and Noise:** Phono, −65 dB (2 mV input); Hi-Level, −85 dB (180 mV input). **Input Impedance:** Phono, 47 k ohms. Hi-Level, 50 k ohms. **Frequency Response:** Phono, ±0.5 dB, 30 Hz to 15 kHz. Hi-Level, ±.2 dB, 20 Hz to 20 kHz. **Rated Output:** 1.5 V at rated sensitivity. **Output Impedance:** 500 ohms. **Tape Output:** 180 mV. **Harmonic Distortion:** less than .05% from 20 Hz to 20 kHz at 1.5 V output. **Channel Separation:** 50 dB at 1 kHz. **Filters:** Low, −3 dB at 15 Hz, −12 dB octave/slope. High, −3 dB at 7 kHz, −12 dB octave/slope. **Headphone Amplifier: Harmonic Distortion:** 0.1% (4 V min. into 100 ohms). **Dimensions:** 4½" H x 17½" W x 8⅛" D. **Power Requirement:** 120/240 VAC, 60/50 Hz.

[2] Heathkit AD-1305 5-band, 2-channel Audio Equalizer

The AD-1305 is an audio equalizer offering complete tone control versatility with five slide controls for each stereo channel, each control handling its own portion of the frequency spectrum. It is designed for use with the AP-1615 above, or any receiver or amplifier having a preamp output and power amp input, or tape monitor.

Each control provides a 12 dB per octave slope, for precise corrections in each portion of the frequency spectrum, without overlapping. You can highlight instruments, create special sound effects, "engineer" your music the way YOU want to hear it! A center detent allows exact "0" dB setting bypassing each band; a tone flat switch bypasses the equalizer entirely, returning the system to flat response.

Adjusts response to allow precise corrections for room acoustics, differences in cartridges and speakers, even deficiencies in program sources. Can also be used with tape recorders to filter old or scratchy records or broadcasts before recording; and with PA and musical instrument amplifiers for anti-feedback control or special effects.

The active bandpass filters in the AD-1305 use large, fully-shielded coils, ensuring extremely low distortion even at full boost and cut. Excellent overload characteristics too. Rated output is 1.5 V, overload does not occur until output is at least 5 volts. The complementary symmetry output circuit permits the AD-1305 to be used with virtually any preamp and amplifier. Harmonic distortion is a mere 0.05% from 20 Hz to 20 kHz; hum and noise are a full 90 dB below rated output (1.5 volts).

The AD-1035's own tape monitor lets it be used in a receiver's tape monitor circuit without losing monitor capability. Has tape monitor, tone flat and power-on switches, switched and unswitched AC outlets for associated equipment. Matched in size and style to the AP-1615 above.

Kit AD-1305, Shpg. wt. 11 lbs. **119.95**

AD-1305 SPECIFICATIONS

Input Impedance: 100 k ohms. **Output Impedance:** 100 ohms. **Rated Output:** 1.5 V rms. **Overload:** 5 V rms. **Signal-to-Noise Ratio:** 90 dB below 1.5 V. **Total Harmonic Distortion:** .05% from 20 Hz to 20 kHz at 1.5 V output. **IM Distortion:** .05% at 1.5 volts. **Frequency Control Ranges:** (separate controls for each channel), 30-125 Hz, 125-500 Hz, 500-2000 Hz, 2000 Hz to 8 kHz, 8 kHz — 32 kHz. **Overall Gain (flat):** Zero dB (unity gain). **Slope of Filters:** 12 dB per octave. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 4$\frac{7}{32}$" H x 17½" W x 8" D.

The Famous Heathkit AR-1500A—one

Declare Your Independence

charg-a-kit

These AR-1500A systems are carefully selected to provide the best sound for the money in each price category—choose the one you like

Save up to 129.14



- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-104 Speakers (See pg. 38)***
- ***B·I·C 980 Automatic Turntable with base and your choice of Shure M91ED or Empire 2000E/III Cartridge (See page 42)***

ARS-107, Shpg. wt. 187 lbs.,
Exp./Frt. **802.51**

If purchased separately, up to $931.65

System Price $802.51

Please Specify Cartridge When Ordering

Save up to 132.14



- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-1373 Speakers (See pg. 37)***
- ***Dual 1228 Automatic Turntable with Base and Choice of Shure M91ED or Empire 2000E/111 Cartridge (see page 43)***

ARS-108, Shpg. wt. 209 lbs.,
Exp./Frt. **878.51**

If purchased separately, up to $1010.65

System Price $878.51

Please Specify Cartridge When Ordering

Save up to 156.14



- ***Heathkit AR-1500A AM/FM Stereo Receiver with walnut veneer case***
- ***Two AS-101 Speakers (See pg. 39)***
- ***Dual 1249 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/111 Cartridge (see page 43)***

ARS-109, Shpg. wt. 338 lbs.,
Exp./Frt. **1315.51**

If purchased separately, up to $1471.65

System Price $1315.51

Please Specify Cartridge When Ordering

Audio-Scope visually monitors stereo and 4-channel systems



$219.95 **Shown with optional walnut veneer case**

Professional-quality audio oscilloscope lets you measure phasing, response and channel separation on all stereo and quad systems; even indicates signal-strength, FM center tune, FM multipath distortion on Heathkit AN-2016, AR-1500A and other receivers with multipath scope outputs. Has built-in audio oscillator for frequency response checks; rear panel inputs for left-front, left-back, right-front and right-back or FM multipath. A front panel input lets you use the AD-1013 as a conventional oscilloscope and there's also a front panel audio oscillator output. With black metal cabinet, optional case below.

Kit AD-1013, Shpg. wt. 20 lbs. **219.95**

Walnut veneer case.
ARA-1500-1, Shpg. wt. 7 lbs. **24.95**

ATTENTION: AR-15 and AJ-15 OWNERS: Add multipath provision in less than an evening. Makes AR-15 and AJ-15 compatible with AD-1013 or any DC coupled oscilloscope.

Kit ARA-15-1, Shpg. wt. 1 lb. **24.95**

AD-1013 SPECIFICATIONS

FRONT PANEL—Scope Input: Vertical Sensitivity: 25 millivolts P-P/cm. Input Impedance: 100 kΩ. Frequency Response: 5 Hz to 200 kHz ±3 dB. Audio Oscillator Output: Range 20 Hz to 20 kHz. Voltage Level: 2 mV to 3 volts (rms) (variable). Output Variation: .25 dB 20 Hz to 20 kHz. Output Impedance (front panel jack): Approximately 600Ω. Calibrator Voltage: 1.0 volt P-P ±5%. Total Harmonic Distortion: 1% or less. REAR PANEL—Oscillator Output Impedance: 6000Ω. Multipath Input (Scope Horizontal and Scope Vertical): Sensitivity: 25 mV P-P/cm. Input Impedance: 100 kΩ. Left Front, Right Front, Left Back and Right Back Inputs: Sensitivity: 25 mV P-P/cm. Input Impedance: 100 kΩ. Frequency Response: 5 Hz to 200 kHz, ±3 dB. 4-Channel Input: Sensitivity: 1 volt P-P/cm. Input Impedance: 5000 Ω. GENERAL—Triggered Sweep Generator: Range: 10 Hz to 100 kHz. Power Requirement: 120 or 240 volts AC, 60/50 Hz, 15 watts. AC Outlet (on rear panel): Unswitched. Dimensions (overall): 5⅛" H x 18½" W x 13½" D.

Charge a kit — no money down on any kit — see page 50 for details.

of the world's superior Stereo Receivers



Shown in optional Walnut Veneer Case.

60 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

The AR-1500A delivers the kind of clean, low-distortion power and excellent AM and FM performance others only talk about. To see for yourself, compare our specifications with any other receiver—kit or assembled. The numbers speak for themselves. 60 watts, minimum RMS, per channel into 8 ohms with less than 0.25% total harmonic distortion from 20-20,000 Hz. Intermodulation distortion is an infinitesimal 0.1% at full power or at one watt. Frequency response extends from 9 Hz to 80,000 Hz, +0, −1dB. And if those numbers sound pretty impressive, remember that they're guaranteed *minimum* specifications!

A factory-assembled FET front-end provides high sensitivity and excellent resistance to overload. IHF sensitivity is just 1.8 μV, so you hear more stations and less noise. And fixed LC IF filters help keep stations separate. A phase-locked multiplex demodulator provides over 40 dB of midband FM stereo separation. Signal-strength and center-channel meters make tuning easy and accurate. There's even a front-panel control so you can set the FM muting threshold to suit reception conditions in your area.

Pushbuttons instantly select tape, tape monitor, auxiliary, phono, AM, FM stereo stations only, or FM with automatic stereo/mono switching. Pushbuttons also control main and remote speakers and, for private listening, there are two front-panel stereo headphone jacks. Has multipath scope outputs, switchable loudness compensation, a tone flat button to bypass the tone controls for "flat" response, a blend button to reduce noise on weak stereo stations and individually adjustable level controls for each channel of every input.

The AR-1500A is one of our easiest kits to build. A clearly illustrated manual shows you everything you need to know—even how to solder and, after assembly, troubleshoot. You start by building a simple test meter which then allows you to test each completed circuit board. Most of the circuitry fits on 10 circuit board modules, nine of which plug into the chassis. Two factory-fabricated wiring harnesses eliminate most point-to-point wiring. The plug-in boards can be flipped up or extended from the chassis while the receiver is operating. From start to finish, the large fully-illustrated assembly manual guides you step by step, even if you're a first-time kitbuilder.

Build-it-yourself, service-it-yourself savings. Because you build the AR-1500A yourself, you can also make necessary repairs—and that lets you keep your receiver "tuned up" and in top condition for years to come.

Beautifully styled too. A blackout dial accents the massive, diecast front panel. And you can custom mount the receiver or order the optional walnut veneer case. Either way, it's one beautiful receiver at a beautiful, build-it-yourself price. Less case.

Kit AR-1500A, Shpg. wt. 53 lbs. **399.95**

Walnut veneer case.
ARA-1500-1, Shpg. wt. 7 lbs. **24.95**

Get the most out of your Heathkit System with these valuable books



Dictionary of Audio and Hi-Fi—non-technical definitions of over 2000 hi-fi terms.
EDP-200 .....**5.95**

Audio Cyclopedia—the most comprehensive & authoritative work on audio available—3650 entries in all.
EDP-113 .....**34.00**

99 Ways to Improve Your Hi-Fi—Projects that enhance your hi-fi enjoyment.
EDP-105 .....**3.50**

Guide to High Fidelity—non-technical presentation of stereo and 4-channel components, how they work, how to maintain, understanding specs, how to select, and a glossary of terms.
EDP-194 .....**4.50**

See page 48 for book ordering information.

AR-1500A SPECIFICATIONS

AMPLIFIER—Frequency Response (1 watt level): −1 dB, 9 Hz to 80 kHz; −3 dB, from less than 5 Hz to 120 kHz. Intermodulation Distortion: Less than 0.1% at full power; less than 0.1% at 1 watt. Damping Factor: Greater than 60. Input Sensitivity: Phono, 1.8 millivolts; Tape, 140 millivolts; Aux, 140 millivolts; Tape Mon, 140 millivolts. Hum & Noise: Phono (10 millivolt reference), −63 dB. Tape and Aux (0.25 volt reference), 75 dB.—FM (Monophonic)—Frequency Response: ±1 dB, 20 to 15,000 Hz. Antenna: 75 or 300-ohm. Sensitivity: 1.8 μV.* Selectivity: 90 dB.* Image Rejection: 100 dB.* IF Rejection: 100 dB.* Capture Ratio: 1.5 dB.* AM Suppression: 50 dB.* Harmonic Distortion: 0.5% or less.* Intermodulation Distortion: 0.1% or less.* Hum & Noise: 60 dB.* Spurious Rejection: 100 dB.*—FM (Stereophonic)—Channel Separation: 40 dB or greater at midfrequencies; 35 dB at 50 Hz; 25 dB at 10 kHz; 20 dB at 15 kHz. Harmonic Distortion: 0.5% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz Suppression: 55 dB or greater. SCA Suppression: 55 dB.—AM—Sensitivity: 50 μV with external input; 300 μV per meter with radiated input. Selectivity: 20 dB at 10 kHz. AM Antenna: Built-in rod type; connections for external antenna and ground. Image Rejection: 70 dB at 600 kHz; 50 dB at 1400 kHz. IF Rejection: 70 dB at 1000 kHz. Harmonic Distortion: Less than 2%.* Hum and Noise: 40 dB.* GENERAL—Accessory AC Outlets: Two. One switched and one unswitched (240 watts). Power Requirement: 120 or 240 volts 60/50 Hz AC. 40 watts idling (zero output) and 356 watts at full output. Dimensions: Overall—18½" W x 5⅛" H x 13⅞" D.

*Rated IHF (Institute of High Fidelity) Standards.

Stereo or 4-Channel, Components or Systems,



Shown in Optional Pecan Veneer Case

$339.95

Heathkit AR-29 AM/FM Stereo Receiver for cost-conscious connoisseurs

35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz

The AR-29 AM/FM stereo receiver is a best-seller that offers you no-compromise performance at a low build-it-yourself kit price. Its overall quality design, along with conservative specifications, assure a level of performance normally associated with far more expensive units. Has pushbutton function selectors, slide controls, FM muting and stereo blend, tape monitor and main/remote speaker switching. Tuning is as easy and accurate as you could want, with a wide, clearly marked slide-rule tuning dial and two meters; signal strength for both AM and FM, center channel for FM. Special level controls for each channel of all inputs let you switch from phono to tuner to tape without changing volume. The AR-29 provides as much power as you're likely to need for most listening areas with about half the distortion of many competitive models. Intermodulation distortion is extremely low too; less than 0.2% at full power and less than 0.1% at 1 watt. As the audio experts have noted, the AR-29's sound is solid, clean and well-defined, which is what hi-fi is all about. Kit assembly is easy and fun — most parts mount on printed circuit boards that simply plug into the unit, and a pre-assembled harness with individual wires stripped and cut to length further simplifies construction. A built-in meter, with test probes and function switch, lets you check yourself every step of the way during assembly, and aids in servicing. With black metal cabinet, order wood case below.

Kit AR-29, Shpg. wt. 34 lbs. **339.95**

Pecan-Stained Veneer Case.
AE-19, Shpg. wt. 9 lbs. **21.95**

Save up to 127.99



If purchased separately, up to $908.65 **Heath Price $780.66**

- *AR-29 AM/FM Stereo Receiver & Case*
- *Two Heathkit AS-1373 Speakers*
- *B•I•C 960 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/III Cartridge*

ARS-106, Shpg. wt. 184 lbs.
Exp./Frt. **780.66**
Please specify cartridge when ordering

AR-29 SPECIFICATIONS

AMPLIFIER — **Frequency Response:** −1 dB, 7 Hz to 60 kHz. **IM Distortion:** 0.2% at 35 W, 0.1% at 1 W. **Input Sensitivity:** Phono: 2.2 mV. Tape, Aux. and Tape Mon., 180 mV. **Hum and Noise:** Phono (10 mV ref.), −65 dB. Tape & Aux. (0.25 V ref.), −75 dB. — **FM Sensitivity:** 1.8 μV*. **Selectivity:** 70 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.5%*. **Spurious Rejection:** −90 dB*. **Antenna:** 75 or 300-ohm. **Channel Separation:** Typically 45 dB at mid-frequencies. **SCA Suppression:** 55 dB. — **AM SECTION** — **AM Antenna:** Adjustable rod. Connections for external ant., gnd. **Sensitivity:** External antenna, 20 μV at 1000 kHz for 20 dB S+N/N. **Selectivity:** 40 dB at 20 kHz. **Image Rejection:** 60 dB at 600 kHz*. 45 dB at 1400 kHz*. **Power Requirement:** 120/240 VAC 60/50 Hz. **Dimensions:** 5⅛" H x 16¾" W x 14½" D.
*Rated IHF (Institute of High Fidelity) Standards.

$279.95 The Top Performing Heathkit AR-1302 AM/FM Stereo Receiver



Shown in Optional Case

20 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz

The AR-1302 is a quality stereo receiver with enough low-distortion power for most any listening area — so you don't pay for more power than you really need. Its features include: FM interstation mute, tape monitor, signal-strength and center-channel tuning meters, main/remote speaker switching, pushbutton function selectors and much more. The AM/FM tuner section has the kind of station-pulling performance you ordinarily find on more expensive receivers. And the AR-1302's elegant, functional styling adds a touch of quality to any decor. With black metal cabinet, order wood case below.

Kit AR-1302, Shpg. wt. 32 lbs. **279.95**

Pecan-Stained Veneer Case.
AE-19, Shpg. wt. 9 lbs. **21.95**

AR-1302 SPECIFICATIONS

IM Distortion: 0.25%. **FM Sensitivity:** 1.9 μV*. **Selectivity:** 60 dB*. **Capture Ratio:** 1.8 dB*. **AM Suppression:** 45 dB*. **Spurious Rejection:** −90 dB*. **Channel Separation:** 40 dB at mid-frequencies. **Antenna Inputs:** 75 or 300-ohm. — **AM SECTION** — **Antenna:** Adjustable rod. **Sensitivity:** Rod Antenna, 300 μV/M*. **Power Requirements:** 120/240 VAC 60/50 Hz. **Dimensions:** 5⅛" H x 16¾" W x 14½" D.
*Rated IHF (Institute of High Fidelity) Standards.

Save up to 144.94



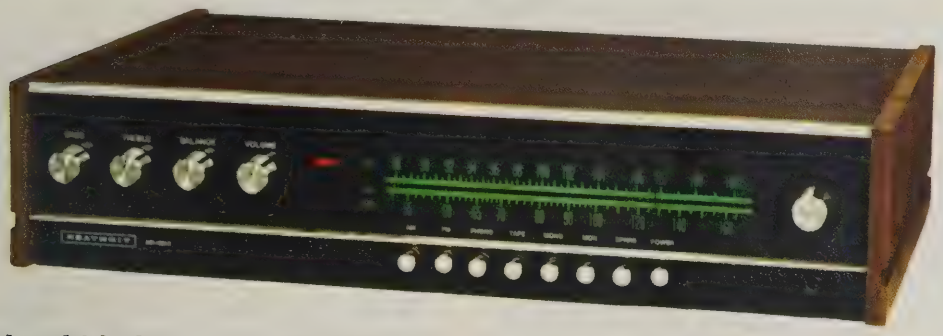
Original Value to $678.65 **System Price $533.71**

- *AR-1302 AM/FM Stereo Receiver & Case*
- *Two Heathkit AS-105W Speakers*
- *B•I•C 940 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/III Cartridge*

ARS-105, Shpg. wt. 161 lbs. **533.71**
Please specify cartridge when ordering

Charge a kit — no money down on any kit — see page 50 for details.

Heathkit hi-fi is your "Better Buy"



Heathkit AR-1214 AM/FM Stereo Receiver—Affordable Hi-Fi

$199.95

15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz

Outstanding performance/price combination! Has power enough for good solid bass, even from inefficient speakers; an FM tuner with two integrated circuits and ceramic filters in the IF; advanced phase-lock-loop FM stereo circuit for enhanced separation with minimum distortion, and factory-assembled and aligned FM front end assures 2 μV sensitivity and excellent 2 dB capture ratio. Features include: tape monitor, pushbutton input selection, speaker on-off button and stereo headphone jack, easy and accurate flywheel tuning, inputs for 75 or 300 ohm antenna plus a swivel-mounted AM antenna. It's an easy to build kit too. The famous Heathkit manual makes it easy even for first-time kit builders. Stylish front panel and case with wood veneer end panels.

Kit AR-1214, Shpg. wt. 18 lbs. **199.95**

AR-1214 SPECIFICATIONS

AMPLIFIER — Frequency Response: ±1 dB, 7 Hz to 100 kHz. IM Distortion: less than 0.5%, full power; less than 0.2% at 1 watt. Hum and Noise: −65 dB. FM SECTION — Sensitivity: 2 μV*. Selectivity: 60 dB*. Image Rejection: 50 dB*. Stereo Separation: 40 dB typ., 35 dB minimum. — AM SECTION — Sensitivity: 100 μV per meter*. Selectivity: 40 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 17" W x 13" D. *Rated IHF (Institute of High Fidelity) Standards.

Heathkit AR-2020 AM/FM 4-Channel Receiver

15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz



$269.95

The AR-2020 is a delight to build and operate! The low-distortion amplifier puts out plenty of power; the AM and FM tuner sections pull in stations far and near with outstanding clarity. Features a pre-assembled and aligned FM front end with ceramic IF filters for excellent amplifying and limiting characteristics. The built-in matrix decoder is optimized for SQ†, also has inputs for both stereo and discrete 4-channel aux. sources. Even has discrete 4-channel tape inputs and outputs. Case with handsome vinyl-clad top and walnut veneer end panels.

Kit AR-2020, Shpg. wt. 31 lbs. **269.95**

AR-2020 SPECIFICATIONS

AMPLIFIER — Frequency Response: ±1 dB, 7 Hz to 50 kHz. IM Distortion: less than .5% at full output; less than .25% at 1 watt. — FM SECTION — Sensitivity: 2 μV*. Selectivity: 60 dB*. Image Rejection: 50 dB*. Capture Ratio: 2 dB*. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 5" H x 20" W x 14" D.

*Rated IHF (Institute of High Fidelity) Standards.
†SQ is a registered trademark of CBS, Inc.

Save up to 122.35



If purchased separately, up to $492.70

System Price $370.35

- *Heathkit AR-1214 AM/FM Stereo Receiver*
- *Two Heathkit AS-1042 Speakers*
- *B•I•C 940 Automatic Turntable with Base and Choice of Shure M91ED or Empire 200E/III Cartridge.*

ARS-104, Shpg. wt. 110 lbs.
Exp./Frt. **370.35**
Please specify cartridge when ordering

Save 75.40



If purchased separately, $388.80

System Price $313.40

- *Heathkit AR-1214 AM/FM Stereo Receiver*
- *Two Heathkit AS-106 Speakers*
- *Garrard 440M Record Changer with Base, Dust Cover, Pickering Magnetic Stereo Cartridge*

ARS-113, Shpg. wt. 68 lbs.
Exp./Frt. **313.40**

Save 85.39



If purchased separately, $512.60

System Price $427.21

- *Heathkit AR-2020 4-Channel Receiver*
- *Four Heathkit AS-106 Speakers*
- *Garrard 440M 3-Speed Record Changer with Base, Dust Cover, Pickering Magnetic Stereo Cartridge*

ARS-112, Shpg. wt. 108 lbs.
Exp./Frt. **427.21**



Four Channel Sound — presents a clear picture of how various 4-channel systems work. **EDP-102** **4.50**

How to Select and Use Hi-Fi and Stereo Equipment — a two volume comprehensive information source.
EDP-190, Vol. 1 .....**4.55**
EDP-191, Vol. 2 .....**4.55**

Hi Fi Stereo Handbook — All the information you want on hi-fi & stereo, including new 4-channel systems.
EDP-104 .....**6.95**

4-Channel Stereo — From Source to Sound — Everything you ever wanted to know about the exciting new subject of 4-channel stereo. **EDP-109** **4.95**

See page 48 for book-ordering information

Fully assembled Mediterranean equipment cabinet

Houses your entire stereo system, including the speakers! One-piece, 5½-ft. credenza is crafted of hickory veneers with solid oak trim finished in pecan stain. Has built-in ducted port speaker enclosures with precut 12" openings. Overall cabinet: 26⅞" H x 66" W x 19¼" D. Shelf compartment: 35⅞" W x 17½" D overall, shelf 15" D. Adjustable shelf height: 5½", 6½", 7½", 8½". Lower compartment: 35⅞" W x 17½" D x 12¼" H min. (shelf at 8½"). Speaker cabinet volume: 2.3 cu. ft. Changer Base: 5½" H x 18" W x 14" D. Shpg. wt. 193 lbs.



AE-101, Exp./Frt. **259.95**

Buy a fine-sounding Heathkit Amplifier today...



$114.95

Our AA-1214 Stereo Amplifier gives you top performance at a price lower than you'd expect

POWER OUTPUT: 15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

Offers the same excellent performance as the amplifier section of our famous AR-1214 receiver. And the AA-1214 has a host of "top of the line features" for operating convenience and versatility. Input level controls match the amplifier to your phono cartridge's output; tape monitor lets you listen as you record (with 3-head decks), positive push-button input selection, front panel stereo headphone jack, bass and treble controls, and much more. The kit building is fun and easy too, with most parts mounted on two printed circuit boards and a wiring harness which eliminates most point-to-point connections. Stacks nicely with the matching AJ-1214 tuner, page 35. Case with walnut-stained veneer end panels.

Kit AA-1214, Shpg. wt. 13 lbs. **114.95**

AA-1214 SPECIFICATIONS

Frequency Response: ± 1 dB, 7 Hz to 100 kHz. IM Distortion: less than 0.5%. Hum and Noise: —65 dB.* Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 12¾" W x 12" D.
*Rated IHF (Institute of High Fidelity) Standards



Shown in optional case $189.95

AA-29 Stereo Amplifier

POWER OUTPUT: 35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS, WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

The amplifier section from our AR-29 receiver, for those who prefer the convenience of "separates". Has power enough for most speaker systems, complete input level controls including tape monitor, slide controls, pushbutton selectors including two for main or remote speakers. Has aux. and tuner inputs, front panel headphone jack. Easy kit assembly too. Compare specs, features with any amp in this price range and you'll build the AA-29. Metal cabinet, order case below.

Kit AA-29, Shpg. wt. 27 lbs. **189.95**

Oiled Pecan Veneer Case.

AE-19, Shpg. wt. 9 lbs. **21.95**

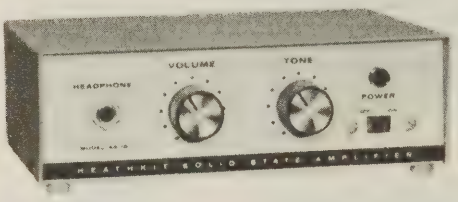
AA-29 SPECIFICATIONS

Frequency Response: ±1 dB, 7 Hz to 60 kHz. IM Distortion: 0.2% at full power; 0.1% at 1 watt. Hum and Noise: Phono, —65 dB. Tape & Aux., —70 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 5⅛" H x 16¾" W x 14½" D.

Now's a great time to choose your "SEPARATES" SYSTEM from Heath and get even MORE SAVINGS!

Combine an amplifier and tuner, turntable or tape deck, and be sure to select our SALE-PRICED AS-1042 or AS-105W speaker systems. (see pages 38-39).

You save on the speakers, you also get our famous Heath 5% system discount!



AA-18 Solid-State Mono Amplifier $24.95

3.25 WATTS, MINIMUM RMS, INTO 8 OHMS WITH LESS THAN 1.5% TOTAL HARMONIC DISTORTION FROM 40-20,000 HZ.

Music on a budget that's fun to build and fun to listen to. Use it anywhere for a roomful of monophonic sound. Inputs may be used for phono with ceramic cartridge, mono AM or FM tuner, or tape recorder. Drives efficient 8-ohm speakers to surprising sound levels... also can be used as a good headphone amplifier. Ideal beginner kit with open chassis layout, simplified PC board construction. Goes together in just a couple of evenings. With metal case.

Kit AA-18, Shpg. wt. 4 lbs. **24.95**

AA-18 SPECIFICATIONS

Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 2⅝" H x 7 1/16" W x 5⅜" D.

AA-2005A deluxe Stereo/Quadraphonic Amplifier



$139.95

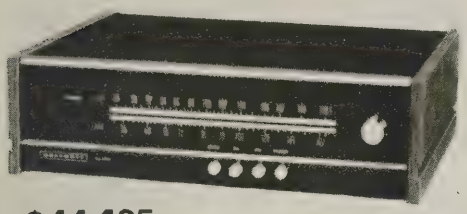
15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

Enjoy the spacious sound of 4-channel at a price lower than many comparable stereo amplifiers. The AA-2005A's built-in matrix decoder is optimized for SQ†-encoded records, tape and FM. And it has inputs for discrete 4-channel tuner, tape and aux. as well as outputs for a discrete tape recorder. Four level controls adjust the volume of each channel, and once the correct balance is established, a master volume control takes over. Has separate bass and treble controls for front and rear channels, front-panel jacks for stereo or 4-channel headphones. Luxurious champagne gold front panel accented by black vinyl-clad top and walnut veneer end panels.

Kit AA-2005A, Shpg. wt. 28 lbs. **139.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Add a matching stereo tuner when you're ready



$114.95

AJ-1214 AM/FM Stereo Tuner

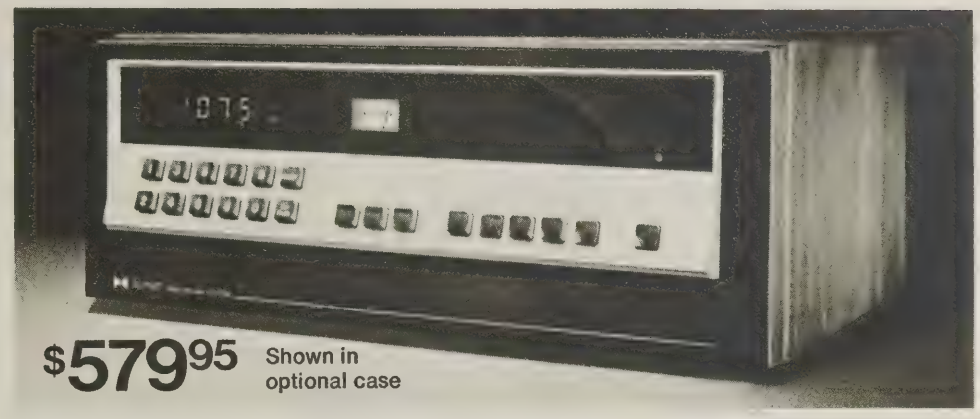
The perfect "system mate" for the AA-1214 amplifier. Has the same features and specs as the tuner section of our famous AR-1214 receiver. Pre-assembled and aligned FM front end provides 2 μV sensitivity with extremely low cross modulation and virtually no overload, even on strong signals. The FM IF uses two IC's and ceramic filters for over 60 dB selectivity. A phase-lock-loop multiplex circuit provides excellent stereo separation. Pushbutton band selection, flywheel tuning, inputs for 75 or 300-ohm antenna. Handsome vinyl clad metal case with walnut-stained veneer end panels.

Kit AJ-1214, Shpg. wt. 11 lbs. **114.95**

AJ-1214 SPECIFICATIONS

FM Sensitivity: 2μV*. Selectivity: 60 dB*. Image Rejection: 50 dB*. Capture Ratio: 2 dB*. AM Suppression: 50 dB*. Stereo Channel Separation: 40 dB typ., 35 dB min. AM Sensitivity: 100 μV per meter*. Selectivity: 40 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 17" W x 13" D.

*Rated IHF (Institute of High Fidelity Standards)



$579.95 Shown in optional case

Our best FM Stereo Tuner with advanced computer technology

Incorporates the most precise and accurate tuning system available today — digital read-out and digital frequency synthesis — for an incredible 0.005% tuning accuracy that virtually eliminates interference as well as many other problems of conventional tuners. Features convenient three-way tuning — enter a station's frequency through the front panel keyboard; use the Auto-Sweep to count down from the top of the FM band and stop automatically at each listenable station, or program it to stop only at stereo stations; or use the A, B and C buttons to select any of three stations programmed with computer-type punch cards. We even supply extra cards so you'll have one for each of your favorite stations. Has multi-path outputs for DC coupled scopes (like the AD-1013), adjustable AGC and squelch, much more. Truly one of the world's finest tuners. With metal cabinet, order case below.

Kit AJ-1510A, Shpg. wt. 25 lbs. **579.95**

Pecan Veneer Case.

AJA-1510-1, Shpg. wt. 8 lbs. **26.95**

AJ-1510 SPECIFICATIONS

MONOPHONIC: Tuning: Digitally synthesized. Antenna: 75 or 300 ohm. Sensitivity: Less than 1.8 μV. Selectivity (alternate channel):* Greater than 95 dB. Capture ratio: Less than 1.5 dB. Harmonic distortion:* Less than 90 dB. IF rejection:* Greater than 95 dB. Spurious rejection: Greater than 90 dB. Channel frequency accuracy: Better than .005%. STEREOPHONIC—Channel separation: 1,000 Hz, 40 dB; 80 Hz, 25 dB; 10 kHz, 25 dB; 15 kHz, 20 dB. Harmonic distortion:* 0.35%. AUDIO OUTPUT—Audio output level: (fixed): 1.2 V rms nominal (with 100% mod.). Output impedance: (fixed): Approx. 4,700 ohms. GENERAL—Power Requirement: 120/240 VAC, 60/50 Hz, 50 W. AC convenience outlet: Unswitched 350 W Max. Dimensions: 6" H x 16⅜" W x 14¾" D.

*Rated IHF (Institute of High Fidelity) Standards.



Save 41% Original Value to $390.70

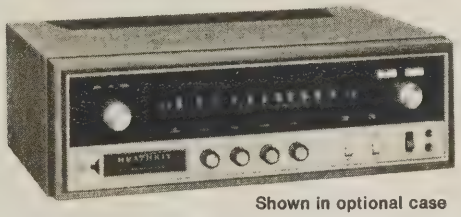
System Price $229.95

- ***Heathkit AA-2005A 4-Channel Amplifier***
- ***Four Heathkit AS-1140 Speakers (See page 36)***
- ***Garrard 440M 3-Speed Record Changer with Base, Dust Cover, Pickering Magnetic Stereo Cartridge (See page 42)***

AA-2005A SPECIFICATIONS

Frequency Response: ±1 dB, 7 Hz to 50 kHz. IM distortion: less than .5% full power, less than .25% at 1 watt. Hum and Noise: phono, —60 dB; tuner, aux., tape, —70 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 4⅞" H x 19¾" W x 12" D.

†SQ is a trademark of CBS, Inc.



Shown in optional case

Our AJ-15 FM Stereo Tuner — the one that made the industry envious

The tuner section from our critically acclaimed AR-15 stereo receiver, the one that was the first to use integrated circuits, the first to use crystal filters, the first to have super specs. It's a top performing tuner with full controls, two tuning meters, front panel phone outputs, output level controls for each channel. Its excellent operation and performance make it a tuner you'll appreciate. With metal cabinet, order case below.

Kit AJ-15, Shpg. wt. 17 lbs. **259.95**

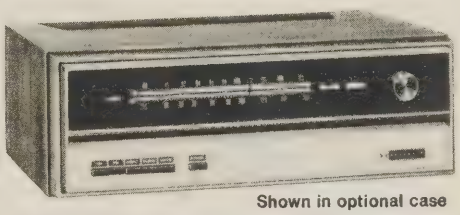
Walnut Veneer Case.

AE-18, Shpg. wt. 8 lbs. **21.95**

AJ-15 SPECIFICATIONS

Sensitivity: 1.8 μV*. Selectivity: 70 dB*. Image Rejection: 90dB*. IF Rejection: 30 dB*. Capture Ratio: 1.5 dB*. AM Suppression: 50 dB*. Harmonic Distortion: 0.5% or less*. Hum & Noise: 65 dB*. Spurious Rejection: 100 dB*. Channel Separation: 40 dB or greater at mid-frequencies. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 4¾" H x 16⅞" W x 12½" D.

*Rated IHF (Institute of High Fidelity Standards).



Shown in optional case

AJ-29 AM/FM Stereo Tuner — an outstanding price/performance combination

The tuner section of the AR-29 stereo receiver, styled and sized to match the AA-29 amplifier. Has pre-assembled FET FM front end with an integrated circuit multiplex, 3 IC's and a 9-pole filter in the IF for an ideally shaped bandpass with 70 dB selectivity for excellent adjacent channel rejection and no alignment problems. Wideband AM too. With metal cabinet, order case below.

Kit AJ-29, Shpg. wt. 19 lbs. **199.95**

Oiled Pecan Veneer Case.

AE-19, Shpg. wt. 9 lbs. **21.95**

AJ-29 SPECIFICATIONS

FM Sensitivity: 1.8 μV*. Selectivity*, 70 dB. Image Rejection, 90 dB*. Capture Ratio: 1.5 dB*. Harmonic Distortion: 0.5%*. Separation: 45 typ. at mid frequencies. AM Sensitivity: 20μV for 20 dB S + N/N*. Selectivity: 40 dB at 20 kHz.* Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 5⅛" H x 16¾" W x 14½" D.

*Rated IHF (Institute of High Fidelity Standards).

Low-Cost Stereo and 4-Channel Performers



$139.95

AC-1118 AM/FM Stereo Receiver

Feature packed — direct-coupled amplifier; inputs for ceramic cartridge changer and tape player; slide volume and balance controls; smooth slide-rule tuning dial and stereo light. Easy construction too — most parts mount on five circuit boards and a few simple adjustments bring it to rated performance.

Kit AC-1118, Shpg. wt. 15 lbs. **139.95**
Kit AS-1140, Speakers 15 lbs. ....**Pair 29.95**
ACP-1138, Ceramic Cart. Changer 15 lbs. **44.95**

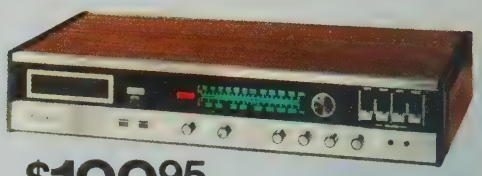


$179.95

AM/FM 8-Track Stereo Receiver

Has the same fine features as AC-1118 plus built-in 8-track stereo tape player with automatic or manual program change and lighted program indicators. The tape player is completely factory assembled and aligned, just drop it into place, connect the input and output. It's an enjoyable kit-building experience, a fine performer too.

Kit AC-1120, Shpg. wt. 22 lbs. **179.95**
Kit AS-1140, Speakers 15 lbs. ....**Pair 29.95**
ACP-1138, Ceramic Cart. Changer 15 lbs. **44.95**



$199.95

AC-1122 AM/FM/8-Track 4-Channel Receiver

Functions as discrete 4-channel amplifier; also has built-in SQ* decoder for matrixed and SQ* 4-channel records and broadcasts. Assembled 8-track tape player is compatible with all stereo and 4-channel tapes. Has full controls, stereo and 4-channel headphone jacks.

Kit AC-1122, Shpg. wt. 25 lbs. **199.95**
Kit AS-1140, Speakers 15 lbs. ....**Pair 29.95**
ACP-1138, Ceramic Cart. Changer 15 lbs. **44.95**

*SQ is a trademark of CBS, Inc.

SAVE 21% ON THESE MATCHING HIGH EFFICIENCY SPEAKERS

SPEAKER PAIR SPECIAL



Were $37.95 NOW ONLY $29.95

4½" foam suspension speakers for use with units on this page, other small systems. 70-16,000 Hz response. Walnut-grain vinyl clad enclosures. 12" H x 7" W x 6" D. Shpg. wt. 15 lbs.
Kit AS-1140 ....Pair 29.95



Ceramic Cartridge Changer

ONLY $44.95

3-speed changer with molded vinyl base, dust cover, 45-rpm adapter, low-mass tonearm. Ceramic cartridge with diamond stylus. 7¼" H x 15¼" W x 14⅛" D. Shpg. wt. 15 lbs.
ACP-1138 .....**44.95**

These specifications apply to all components on this page.

POWER OUTPUT: 4.5 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 1.0% TOTAL HARMONIC DISTORTION FROM 50-15,000 HZ.

AMPLIFIER — Frequency Response: 30-15,000 Hz, ±3 dB. Input Senstivity: ceramic phono, 140 mV; high level inputs, 120 mV. Hum & Noise: —60 dB. FM Sensitivity*: 5 μV. Selectivity*: 60 dB. Harmonic Distortion*: 1%. Hum & Noise: —55 dB. Stereo Channel Separation: 35 dB. FM Antenna: 300-ohm, external. AM — Sensitivity: 300 μV/m for 20 dB S+N/N. Selectivity: 40 dB, alternate channel. Hum & Noise: —35 dB. TAPE PLAYER — Motor: Synchronous. Frequency Response: 50-10,000 Hz, +3, —5 dB. Separation: 30 dB at 1 kHz. Harmonic Distortion: 3% at 1 kHz S.R.L., max. Hum & Noise: —40 dB. Wow & Flutter: less than 0.3%. GENERAL — Power Requirement:120/240 VAC, 60/50 Hz. Dimensions: All units are 4" high and 15" deep; units with 8-track players are 22" wide, others are 17" wide. Cases: walnut-grained, vinyl clad metal and plastic.
*Rated IHF (Institute of High Fidelity) standards.



$99.95

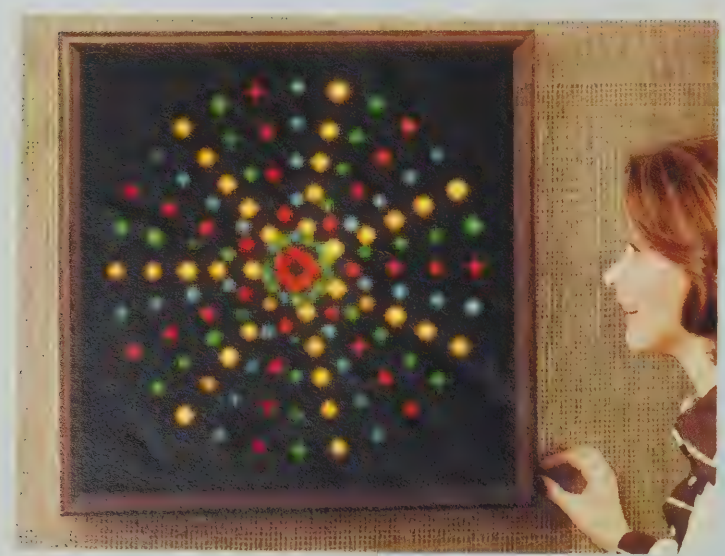
AT-1124 8-Track 4-Channel Player/Amplifier

Plays all discrete 4-channel and stereo 8-track tapes; has SQ* decoder for matrixed 4-channel material or enhanced stereo; inputs for ceramic cartridge changer and high-level stereo or 4-channel source. Fully assembled and aligned 8-track player is ready to connect.

Kit AT-1124, Shpg. wt. 21 lbs. **99.95**
Kit AS-1140, Speakers 15 lbs. ....**Pair 29.95**
ACP-1138, Ceramic Cart. Changer 15 lbs. **44.95**

Order any above units with speakers and changer listed, and save 5% with system discount.

Turn your music into a dazzling light show



$79.95

Make music "come alive" with vibrant, pulsating color

The TD-1006 Color Organ adds exciting sights to your sound system. With its extra wide dynamic range, it translates any kind of music into pulsing, whirling starbursts of color. Just connect the TD-1006 to the speaker leads of any sound source (except AM radio). Without effecting the sound, active filters separate the audio signal into four frequency bands, each with 35 brilliantly colored lights — red for bass, blue for low-midrange, green for upper-midrange and amber for treble (140 lights total). The lights pulsate in time to the music creating spokes of color that seem to swirl.

Just wire the two circuit boards and install the pre-strung lights in the factory-assembled cabinet. A single knob on the side controls sensitivity and turns power on or off. Just 4½" deep — even hang it on the wall. Walnut-grained vinyl-clad case, black-out front panel. We think you'll agree music has never looked better.

Kit TD-1006, Shpg. Wt. 32 lbs. **79.95**

TD-1006 Specifications

Dynamic Range: 25 dB, minimum. **Input Signal:** 1 volt RMS min. to 22 volts RMS max. **Source Protection:** line isolation. **Power Requirement:** 120/240 VAC, 50-60 Hz, 80 watts max. **Dimensions:** 22¾" W x 22¾" H x 4½" D. **Net Weight:** 20 lbs.

Find out how easy it is to build a kit — order the manual. See page 49.

An exciting new 3-way speaker value



$149.95 EACH

Heathkit AS-1373 rivals the performance of speakers costing much, much more

Here's a superb, build-it-yourself addition to our speaker line...with guaranteed specifications you won't find on comparably priced speakers. The 10″ woofer provides solid, well-defined bass. And the woofer-to-midrange crossover frequency is 500 Hz to minimize intermodulation distortion and insure smoothness. The natural-sounding midrange is due in large part to two design features normally found only in speakers costing over $300. First, a special subenclosure isolates the 4½″ midrange speaker from distortion caused by woofer vibrations (most bookshelf systems use a less effective plastic back behind the midrange cone). Second, the subenclosure is filled with a polyester damping material which prevents reflections — a primary cause of midrange coloration. The 1″ dome tweeter is one of the finest made — excellent power handling and superb definition. Even at 12,000 Hz its horizontal dispersion is 120°!

Innovative design makes it an even better speaker. Poor imaging (a constantly-shifting blur of sound) is a common problem in bookshelf speakers. To create a sharply focused sound "image", all three of the AS-1373's drivers are flush-mounted. And there are no "rails" around the edges of the cabinet to limit treble dispersion or cause peaks and dips in tweeter response. For optimum imaging, the tweeter should be located directly above the midrange. The AS-1373 is the only speaker that permits this whether you position the system horizontally or vertically — simply interchange the positions of the tweeter and switch plate. Finally, the handsome foam grille contributes to superior imaging because it is more acoustically transparent than ordinary grille cloth — especially at high frequencies.

The AS-1373 is a great combination of efficiency and power handling characteristics. Although it can be driven by as little as 10 watts, it's rated at 200 watts max. (the woofer can withstand up to 400 watts of pulse power). So, while the AS-1373 can be used with almost any amplifier, a high-power amplifier like the AA-1640 reveals its awesome dynamic range. And the AS-1373 is the only bookshelf system which provides maximum protection by individually fusing each driver, virtually eliminating expensive burn outs. The sophisticated crossover circuit (a weak link in many systems) is every bit as rugged as the drivers. Two subtle but effective controls match the mid- and high-frequency response to your room's acoustics. Shpg. wt. 62 lbs.

Kit AS-1373, Exp./Frt. . . . . **each 149.95**

AS-1373 SPECIFICATIONS

Frequency Response: ±3 dB from 40 Hz to 20,000 Hz, in a typical listening room; −10 dB at 30 Hz and 22k Hz. **Impedance:** 8 ohms, nominal; 6 ohms, minimum. **Recommended Amplifier Power:** 10 watts minimum; 200 watts, maximum (fused for larger amps). **Crossover Frequencies:** 500 Hz and 3000 Hz, 12 dB/octave. **Controls:** 3 kHz shelf/flat; 10 kHz rolloff/flat. **Fuses:** Woofer, 1¼A slow-blow; midrange, ¾A slow-blow; tweeter, ½A regular. **WOOFER Diameter:** 10″, nominal. **Magnet Weight:** 2 lbs. **Power Handling:** 400 watts, pulse (if not excursion limited); 40 watts continuous. **MID-RANGE Diameter:** 4½″, nominal. **Magnet Weight:** 10 ounces. **Power Handling:** 250 watts, pulse; 25 watts continuous. **TWEETER Diameter:** 1″ dome. **Magnet Weight:** 8 ounces. **Power Handling:** 140 watts, pulse; 14 watts continuous. **ENCLOSURE Size:** 26″ H x 14½″ W x 11⅞″ D, without 1¼″ grille. **Net Weight:** 47 lbs.

New high-performance headphones...for stereo enjoyment on a budget



New Koss High Velocity Stereophone with Decilite™ driver elements

AHP-1168, Shpg. wt. 2 lbs. Assembled **44.95**

AHP-1168 SPECIFICATIONS

Frequency Response: 15-20,000 Hz. **Total Harmonic Distortion:** Less than 0.5%. **Source Impedance:** 3.2-600 ohm. **Cord:** Coiled, 10′ extended. **Weight:** 9.3 oz., less cord.



New Koss High Velocity Stereophone with individual gain controls

AHP-1169, Shpg. wt. 3 lbs. Assembled. **54.95**

AHP-1169 SPECIFICATIONS

Frequency Response: 10-20,000 Hz. **Total Harmonic Distortion:** Less than 1.0%. **Source Impedance:** 3.2-600 ohm. **Cord:** Coiled, 10′ extended. **Weight:** 24 oz., less cord.

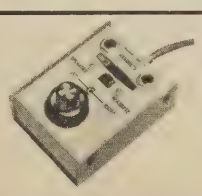


New Sennheiser Stereo Headphones with patented Open-Air Design

AHP-1193, Shpg. wt. 2 lbs. Assembled. . . **64.95**

AHP-1193 SPECIFICATIONS

Frequency Response: 15-20,000 Hz. **Total Harmonic Distortion:** Less than 1.0%. **Impedance:** 2,000 ohms per channel — can be connected directly to either hi or lo impedance outputs. **Weight:** 6.5 oz., less cord. **Cord:** 10′ extended.



Stereo Headphone Control Unit

Box on 20-foot cable provides jacks for two sets of headphones, volume control and speaker on/off switch. A great kit for first-time builders.

Kit AC-17, Shpg. wt. 3 lbs. **14.95**

Find out how easy it is to build a kit — order the manual. See page 49.

Get More VALUE for your audio dollar with

PAIR SPECIAL!
SAVE $15.95
Reg. $95.90 Pair
NOW $79.95 Pair



1 $47.95 EACH

2 $57.95 EACH

3 $109.95 EACH

4 $219.95 EACH

5 $239.95 EACH

Heathkit Bookshelf Speaker Systems put the sound where you want it — and they look great too, with factory assembled and finished cabinets

1 This 2-way system handles 10-50 watts for medium-power amplifiers and receivers

Good sound on a low budget. A high compliance, long throw 8" woofer and 3½" shallow cone/dome tweeter deliver response from 40 to 18,000 Hz. The cross-over system operates at 1500 Hz to distribute frequencies evenly for smooth overall response. System resonance at 65 Hz. A rear panel level control contours high frequency response to your listening room. The woofer has an 8.5-oz. magnet. The tweeter uses a 1.3-oz. magnet. Ten watts is all that's needed to power the AS-1042, yet it can handle up to 50 watts. Impedance is 8 ohms nominal, 6 ohms minimum. Cabinet comes fully assembled and covered with handsome walnut-toned vinyl. 19"H x 10"W x 8¼"D.

Kit AS-1042, Shpg. wt. 27 lbs. ..... **each 47.95**
PAIR SPECIAL, Shpg. wt. 54 lbs. ..... **pair 79.95**

2 High efficiency 2-way system ideal for "budget" music systems

Designed for use with low power amplifiers. It can be driven by as little as 5 watts yet can handle up to 25 watts. The system uses an exponential rectangular horn tweeter and an 8-inch woofer in a vented bass-reflex enclosure. A level control knob for the tweeter is mounted on the rear panel. Magnets are 10 ounces for the woofer and 1.47 ounces on the tweeter. Frequency response is 70 to 15,000 Hz with crossover at 3,500 Hz. 8-ohm nominal impedance. The walnut toned vinyl-clad cabinet comes fully assembled. 21½" H x 12" W x 10½" D.

Kit AS-1039, Shpg. wt. 36 lbs. ..... **each 57.95**

3 High performance 3-way system with midrange speaker for added presence

The Heathkit AS-104 has the 100 watt power-handling capacity and features of the AS-105 but adds a low resonance, high compliance 4½-in. midrange speaker in a sealed and acoustically lined sub-enclosure. 8 ohm impedance. RLC crossover at 500 Hz and 4500 Hz. Individual mid-frequency and high-frequency controls are provided to allow "tailoring" the AS-104's frequency response so it sounds its best in any listening area. The assembled oiled walnut veneer cabinet has a removable front grille for easy access to speaker elements. Dimensions are 24" H x 13½" W x 11½" D.

Kit AS-104, Shpg. wt. 54 lbs., Express/Frt. ..... **each 109.95**

4 Heathkit/AR combine for super sound

The speaker that can show how good the rest of your system is. It delivers clean, natural response with extremely low distortion from 30 Hz to 20,000 Hz. Three Acoustic Research AR-3A drivers are mounted in an oiled walnut veneer enclosure. The 12-in. acoustic suspension woofer provides solid bass down to 30 Hz. The special hemispherical dome midrange and tweeter, combined with a precisely-engineered crossover network, deliver natural transparent sound. Individual midrange and tweeter level controls allow you to tailor the sound to the listening area. Requires min. 25 W rms. 25" H x 14" W x 11¾" D.

Kit AS-103A, Shpg. wt. 64 lbs., Express/Frt. ..... **each 219.95**

5 Heathkit/JBL ultra-efficient system

Handles up to 50 watts, yet it's so efficient it can be driven by almost any low power amplifier. Frequency response is smooth from 40 Hz to 20 kHz. The 14-in. woofer uses an inert, self damping cone suspension and 11½-lb. magnet for clear, full bass. The JBL 2-in. direct radiator produces sharp, lifelike highs. System impedance is 8 ohms. The crossover network operates at 2000 Hz and is not affected by the 3-position high-frequency level control. The damped reflex enclosure is factory assembled from oak veneer and furniture grade hardwoods. Measures 14" H x 23½" W x 12" D.

Kit AS-48, Shpg. wt. 57 lbs. ..... **Was 249.95, Now 239.95**



Helpful hints for the audiophile

How to Wire Hi-Fi Extension Speakers — includes instructions, schematics & photos for installing systems to meet specific needs.
EDP-103, ... **3.95**

Acoustic Techniques for Home & Studio — covers listening room design & what test equipment to use in determining acoustic performance; for hi-fi buff & professional.
EDP-111, ... **5.95**

Hi-Fi Loudspeakers and Enclosure — design, construction, placement.
EDP-192, ... **6.85**

See page 48 for book-ordering information

Save 5% with Heath hi-fi discount — see page 43.

Heathkit Speaker Systems

Big-sound systems at surprisingly low prices



6

$339.95 EACH



6 Incomparable Heath/Altec-Lansing Sound

Combines Heathkit engineering with Altec-Lansing speakers for real audio excellence. The AS-101 is a bass reflex design with a high compliance 15-in. woofer. The woofer has a 10½-lb. magnet with a 3-in. edge-wound copper ribbon voice coil. The mid and high-frequency sectoral horn's driver uses a 13-oz. magnet and 1¾-in. voice coil. The AS-101 can be driven with as little as 10 watts, and will handle up to 50 watts. Impedance is 8 ohms. The two-way crossover system operates at 800 Hz and is compatible with biamplification. The high frequency level control allows balancing output to your taste. The factory assembled cabinet features pecan veneers, hardwood trim and gold and black grille cloth. 29⅝" H x 27¾" W x 19⅞" D.

Kit AS-101, Shpg. wt. 128 lbs. Exp./Frt. ..... **each 339.95**

7 Our lowest-priced acoustic suspension speaker system

Clean, well-balanced sound, the kind you'd expect from larger, more expensive speakers. A high-compliance 4½" speaker provides useful response from 70 Hz to 16 kHz. The factory-assembled walnut veneer enclosure measures just 12" H x 7" W x 6" D. For use with 4 to 20-watt amplifiers. 8 ohms. Build a pair in just an evening for stereo sound you appreciate and enjoy for years.

Kit AS-106, Shpg. wt. 9 lbs. ..... **each 26.95**

Kit AS-106-2, Shpg. wt. 25 lbs. ..... **49.90 pair**

8 Great little 2-way bookshelf system

Superb sound with almost any amplifier with 10 to 100 watts per channel. Useful response from 30 Hz to 18 kHz with extremely low distortion below 50 Hz. Factory-assembled walnut-veneer enclosure houses 10" high-compliance woofer and 3½" cone/dome tweeter. A high-frequency level control lets you "tune" the sound to your listening area. 24" H x 13½" W x 11½" D. 8 ohms.

Kit AS-105W, Shpg. wt. 52 lbs. ..... **each 89.95**

PAIR SPECIAL, Shpg. wt. 104 lbs. ..... **pair 149.95**

Design your own sound system with Heath Separate Speakers

12" Two-way High Compliance...woofer with re-entrant horn tweeter; high frequency level control; 1-yr. guarantee.

Model AS-183, Shpg. wt. 15 lbs. **69.95**
Pair (AS-183-2), Shpg. wt. 39 lbs. **133.00**

AS-183 SPECIFICATIONS — Impedance: 8 ohms. Power Rating: 30 watts. Frequency Response: 20-15,000 Hz. Cone Resonance: 25 Hz. Magnet Weights: 1¾ lbs., 4.65 oz. Voice Coil Sizes: 1½" and 1".



12" Three-way Coaxial...woofer, midrange cone & special design horn tweeter; handles up to 20 W; electrical & mechanical crossovers; high frequency level control; 1-yr. guarantee.

Model AS-163, Shpg. wt. 12 lbs. **44.95**
Pair (AS-163-2), Shpg. wt. 32 lbs. **85.00**

AS-163 SPECIFICATIONS — Impedance: 8 ohms. Frequency Response: 40-15,000 Hz. Cone Resonance: 60 Hz. Magnet Weights: 13 oz., 1 oz. Voice Coil Sizes: 1½" and 1".



8" Two-way Coaxial...separate woofer & tweeter; 50-14,000 Hz response; handles up to 12 W; high frequency level control; 1-yr. guarantee.

Model AS-133, Shpg. wt. 6 lbs. **24.95**
Pair (AS-133-2), Shpg. wt. 18 lbs. **47.00**

AS-133 SPECIFICATIONS — Impedance: 8 ohms. Cone Resonance: 70 Hz. Magnet Weights: 10 oz., 0.68 oz. Voice Coil Sizes: 1" and 5/16".



12" three-way with 80-watt capacity

12" Three-way High Compliance... unitary speaker with woofer, compression mid-range & horn-loaded compression super tweeter; 80 W peak power capability; 600 & 4000 Hz crossovers; mid & high frequency level control; 1-yr. guarantee.

Model AS-27, Shpg. wt. 15 lbs. **89.95**

Pair (AS-27-2), Sh. wt. 33 lbs. **170.00**

AS-27 SPECIFICATIONS — Impedance: 8 ohms. Frequency Response: 20-20,000 Hz. Cone Resonance: 30 Hz. Magnet Weights: 1 lb., 6.4 oz., 4.6 oz. Voice Coil Sizes: 1½" and 1".



$89.95

12" Two-way Coaxial...separate woofer & tweeter; capacitive crossover; handles up to 15 W; high frequency level control; 1-yr. guarantee.

Model AS-153, Shpg. wt. 10 lbs. **26.95**
Pair (AS-153-2), Shpg. wt. 28 lbs. **49.00**

AS-153 SPECIFICATIONS: Impedance: 8 ohms. Frequency Response: 50-15,000 Hz. Cone Resonance: 60 Hz. Magnet Weights: 10 oz., 1.47 oz. Voice Coil Sizes: 1" and 5/16".



Charge a kit — no money down on any kit — see page 50 for details.

Build Your Way To Better Recording



We think that dollar for dollar, the AD-1530 is the best cassette deck you can buy. The guaranteed specifications clearly show that this deck is serious about quality and performance. It could be the best addition to your system you can make...and you can build it yourself.

$279.95

Stereo Cassette Deck with Dolby®

- ***Built-in test circuitry***
- ***Lighted VU level meters***
- ***Individual record level controls***
- ***Pause control for easy editing***
- ***Easy modular circuit board assembly***

The Heathkit AD-1530, in easy-to-assemble kit form, lets you enjoy the finest tape entertainment the cassette format has to offer — a performance-proven domestic tape transport, combined with the famous Dolby noise reduction system and Heath electronics. The famous tape transport comes preassembled, ready to wire into the kit. Has play, stop, fast-forward, rewind, and eject controls; safety interlock; automatic shutoff at end of tape in both "play" and "record" modes; piano-key control of play-record-stop; lever control of fast-forward, rewind, eject, stereo/mono input, Dolby on-off, selector for iron oxide or chromium dioxide tapes.

Other features include individual bias adjust controls for regular and CrO_2 tape; individual record level controls with separate VU meters; large three-digit resettable counter; input selector switch for microphone or high-level source input (any low impedance microphone with standard ¼" phone jack can be used); walnut-stained veneer base. Modular plug-in circuit board design in the amplifier and Dolby circuits simplify kit construction and servicing. Built-in test circuitry and free test cassette aid in checkout and adjustment. Blank 60 minute cassette included.

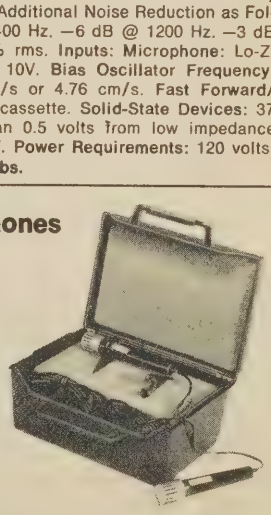
Kit AD-1530, Shpg. wt. 20 lbs. **279.95**
ADA-1530-1, Dust cover, Shpg. wt. 1 lb. **6.95**

AD-1530 SPECIFICATIONS

Frequency Response: Regular (iron oxide) tape; ±3 dB from 40 Hz to 12 kHz typical. CrO_2 (chromium dioxide) tape; ±3 dB from 40 Hz to 14 kHz typical. **Distortion:** Tape dependent; electronics less than 0.2%. **Hum and Noise:** Dolby Switch OFF, −48 dB Dolby Switch ON-Provides Additional Noise Reduction as Follows; −10 dB @ 4000 Hz and up. −9 dB @ 2400 Hz. −6 dB @ 1200 Hz. −3 dB @ 600 Hz. **Wow and Flutter:** Less than 0.25% rms. **Inputs: Microphone:** Lo-Z, 0.2 mV to 10 mV. **Auxiliary:** Hi-Z, 50 mV to 10V. **Bias Oscillator Frequency:** Approximately 100 kHz. **Tape Speed:** 1⅞" in/s or 4.76 cm/s. **Fast Forward/Rewind Time:** Approximately 45 sec. for C-60 cassette. **Solid-State Devices:** 37 transistors and 2 JFET's. **Output:** Greater than 0.5 volts from low impedance source. **Dimensions:** 5½" H x 9½" D x 14" W. **Power Requirements:** 120 volts, 60 Hz, 15 W. **Dolby is a Trademark of Dolby labs.**

Matched Dynamic Microphones

$22.95



High-quality, low-priced dynamic microphones get your material on tape, on a budget. Especially suited for use with the Heathkit AD-110 Stereo Tape Player/Recorder. Includes two mikes, connector cables and rugged, padded carrying case.

ADA-110-1, Shpg. wt. 2 lbs. **22.95**

$129.95

Heathkit Stereo Mike Mixer console

The Heathkit TM-1626 is an absolute must for your own quality taping system.

The wide response (40-20,000 Hz, ±1 dB) and low distortion (0.5%) of the solid-state TM-1626 will give you clean, life-like mixing capability. Each of the two outputs has its own master level control and meter and they can be switched for use in stereo or mono. The six inputs include two high-level auxiliary inputs for disc or tape sources, and four mike inputs which are switchable to high impedance or balanced or unbalanced low impedance, for use with any type of microphone. The fourth microphone input has a "pan" control to adjust its apparent location from left to right or anywhere in between. All six inputs can be individually switched to left, off, or right channel. Access to "Mix-Bus" permits paralleling added mixers for extra inputs and outputs. A pair of backlighted meters with two switch-selected ranges plus a pair of LED's with adjustable threshold show instantaneous peaks faster than any meter. Handsome cabinet in black with walnut stained veneer end panels.

Kit TM-1626, Shpg. wt. 12 lbs. **129.95**

TM-1626 SPECIFICATIONS

Frequency Response: 40-20,000 Hz, ±1 dB. **Distortion:** 0.5% maximum at outputs from 50 mV to 6.5 volts. **Hum:** −80 dB at minimum volume. **Hum & Noise:** −60 dBV from 300-20,000 Hz, −50 dB from 20-20,000 Hz, all controls set at maximum. **Minimum Input Overload:** Mike — 60 mV (low-Z), 900 mV (high-Z). Auxiliary — 3.0 V. Mixer Bus — 200 mV. **Input Impedance:** Mike — 1100 ohms (low-Z), 170k ohms (high-Z). Auxiliary: 100k ohms. Mixer Bus: 3000 ohms. **Output Impedance:** 150 ohms. **LED Peak Detectors:** adjustable from 80 mV to 6.5 volts output. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts maximum. **Dimensions:** 5¾6" H x 16" W x 9⅞" D.

Stereo cassette record/play deck

Internally adjustable bias for standard or CrO_2 tapes



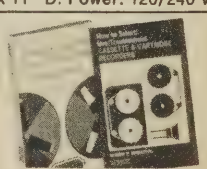
$154.95

A low cost way to play and record stereo or mono cassettes through your system. The AD-110 has features normally found on more expensive decks — regulated DC motor for stable speed; level meters; pushbutton transport. Transport is factory assembled. Blank C-60 cassette included.

Kit AD-110, Shpg. wt. 12 lbs. **154.95**

AD-110 SPECIFICATIONS

Frequency Response (record play): ±3 dB from 30 Hz to 12 kHz typical. **Inputs:** Aux. 70 mV to 10 V. Mike 0.2-6 mV. **Hum and Noise:** −45 dB. **Bias and Erase Frequency:** 110 kHz. **Wow and Flutter:** Less than .25% WRMS record and playback. **Motor:** Solid-state regulated DC. **Fast Forward-Rewind Time:** Less than 120 sec. for C-60 cassette. **Tape:** C-30, C-60, C-90 cassettes. **Control:** Power switch, record level (left and right channel), record, rewind, stop-eject, play, fast forward, pause. **Output:** Greater than ½ volt from low impedance amplifier stage. **Finish:** Walnut-stained veneer end panels. **Dimensions (over-all):** 3⅛" H x 13⅝" W x 11" D. **Power:** 120/240 VAC, 60/50 Hz, 7 watts.



Questions & Answers About Tape Recording — everything from "accessories" to "weak sound." **EDP-107** **5.95**
How to Select/Use/Troubleshoot Cassette and Cartridge Recorders. EDP-195 .....**4.55**

See page 48 for book-ordering information

Charge a kit — no money down on any kit — see page 50 for details.

Build a quality PA System for your club or organization and SAVE

- **SCHOOLS** *Auditoriums, Quadrangles, Lecture Halls, Football Fields*
- **CHURCHES** *Meeting Halls, Chapels, Parking Lots, Outdoor Events*
- **BUSINESSES** *Conference Rooms, Trade Shows, Display Areas*
- **PERFORMERS** *Supply Your Own Sound System for Clubs and Halls*



Save $49.90

Complete PA System

- *TA-1620 Control Amplifier*
- *Two TS-1630 Speaker Columns*

If purchased separately, $849.85

Heath Price $799.95

1 TA-1620 PA Control Amplifier

Offers complete control and system flexibility — add as many booster amplifiers and speakers as you need for the power and coverage you want

The TA-1620 PA Control Amplifier has the versatility and flexibility you need for virtually any audience coverage situation—church, fraternal hall, auditorium, school, outdoors—it's ideal for portable or permanent installation. And it's about HALF the cost of comparable assembled units! Six fully mixable low-impedance inputs, each with bass, treble, reverb on-off and attenuation controls handle anything from individual lecturers to groups of performers. Special filtering circuits optimize response for both voice and music. The complete reverb system even allows special musical effects from any or all of the inputs. Switchable filters for low, mid-low, mid-high and high frequencies minimize feedback, and exclusive Heath bass filter virtually eliminates the "boominess" of cardioid mikes used close up. The built-in amplifier delivers 100 watts continuous power to two speaker columns. You can add as many booster amplifiers and speakers as you need for complete area coverage — even interconnect more control amplifiers for additional inputs. The well-lighted, "human-engineered" control panel, and heavy-duty conservative design make this a PA amplifier you'll use and appreciate for years to come. Rugged particle board case covered with gray high-pressure laminate with protective aluminum edge guard strips and convenient recessed handles. A level/test meter checks your work during assembly.

Kit TA-1620, Shpg. wt. 53 lbs. **449.95**

2 Low-Distortion Booster Amplifier

The same amplifier circuitry as the TA-1620—100 watts continuous into two TS-1630 Speaker Columns. And we think it's the quietest, lowest-distortion booster amp you can buy. Takes its signal from the Control Amplifier or, to eliminate long cable runs, it can take its signal from the extra rear-panel jack on a speaker column—a Heath exclusive. A lighted meter monitors the output, a level control adjusts the volume. Includes particle board end panels covered with gray high-pressure laminate.

Kit TA-1625, Shpg. wt. 22 lbs. **179.95**

3 Hi-Fi Speaker Column

One of the world's best PA speakers. Six 8″ full-range speakers are response-tailored for clean voice reproduction with excellent dispersion. An output jack lets you drive a TA-1625 Booster Amp or connect two Speaker Columns in parallel. Particle board enclosure covered with gray high-pressure laminate includes side-mounted handle and aluminum edge guard strips. With 50′ cable, storage compartment. Removable dark brown grille cloth.



Kit TS-1630, Shpg. wt. 112 lbs., Exp./Frt. .....**each 199.95**

TAA-1620-3 Distribution Transformer. Minimizes signal loss in long runs of speaker cable. Provides 100W, 70.7 V balanced line from TA-1620 or TA-1625. 6 ohms. Shpg. wt. 8 lbs. **26.95**

Learn About Electronic Music



Experimenting with Electronic Music — from sine-wave generators to synthesizers. **EDP-209** (Tab) ..**4.95**

Electronic Music Production — how to use ring modulators, multivibrators, etc. For special effects. **EDP-210** (Tab) **3.95**

Electronic Musical Instruments — from amplification to synthesizers. Includes troubleshooting guide. **EDP-211** (Tab) **4.95**

See page 48 for book ordering information.

COMPLETE SYSTEM SPECIFICATIONS

TA-1620 SPECIFICATIONS — **Frequency Response:** 40-15,000 Hz, ±2 dB. **Power Output:** 100 watts continuous at 6 ohms (two columns) before clipping. **Total Harmonic Distortion:** 2% or less. **Hum and Noise:** —60 dB. **Sensitivity:** Mike, 2.5 mV rms (20 mV rms, attenuator in); high-level 250 mV rms. **Input Impedance:** Microphone, balanced 600 ohms (nominal); Hi-Level unbalanced 1 megohm. **Gain:** Microphone, 80 dB (62 dB with attenuator in); Hi-Level, 40 dB. **Mike Inputs:** Switchcraft QG jacks, compatible with Cannon plugs. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 11¼″ H x 21½″ W x 12″ D. **Net Weight:** 36 lbs.

TA-1625 SPECIFICATIONS — **Frequency Response:** 20-20,000 Hz, +1 dB. **Power Output:** 100 watts continuous at 6 ohms (two speaker columns) before clipping. **Input Sensitivity:** 650 mV rms for rated output. **Total Harmonic Distortion:** less than 0.5% at full output. **Hum and Noise:** —80 dB referred to full output. **Input Impedance:** 30 K ohms; 1 K ohm when switched to speaker input. **Gain:** 30 dB. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 6⅛″ H x 21″ W x 7″ D. **Net Weight:** 25 lbs.

TS-1630 SPECIFICATIONS — **Frequency Response:** 70-8000 Hz. **Power Handling:** 60 watts continuous. **Nominal Impedance:** 12 ohms. **Dimensions:** 62″ H x 14″ W x 10¼″ D. **Net Weight:** 85 lbs.

Charge a kit — no money down on any kit — see page 50 for details.

Order one of these Heath-recommended



SAVE UP TO $86.90

$199.95

With Base and Cartridge

If purchased separately, up to $286.85

1 B·I·C 980 with electronic rpm control

Direct belt drive and electronic speed control give you the performance and reliability of studio-quality turntables. The unique "programming panel" gives you the convenience of a changer. Permits automatic play of a single disc once or up to six times, or plays a six record stack. Has 24-pole synchronous motor, pitch control, strobe, 33⅓ and 45 rpm operation. Includes base, specify Shure M91ED or Empire 2000/III cartridge. For premium performance, add $45 for Shure V-15 Type III or $35 for Audio-Technica AT-14S. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1167, Shpg. wt. 13 lbs. **199.95**



SAVE UP TO $86.90

$159.95

With Base and Cartridge

If purchased separately, up to $246.85

2 B·I·C 960 belt-drive automatic turntable

The same ultra-reliable design found on the B·I·C 980 minus the electronic speed control, adjustable pitch and strobe light. The 960 has the trouble-free operation only a true belt-drive turntable can provide, coupled with B·I·C's unique "programming panel" that lets you repeat a record up to six times, or play six records in a stack. Offers 33⅓ and 45 rpm operation. Includes base and your choice of Shure M91ED or Empire 2000E/111 cartridge at no additional cost. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1166, Shpg. wt. 12 lbs. **159.95**



SAVE UP TO $86.90

$109.95

With Base and Cartridge

If purchased separately, up to $196.85

3 B·I·C 940 budget-priced belt-drive

A true B·I·C automatic turntable — with belt drive, low speed 24-pole synchronous motor, up to six record continuous play. Extremely low-friction bearings and an isolated counterweight allow the tonearm to track even the highest quality cartridges. Has viscous-damped cueing, full-size 12" platter, 33⅓ and 45 rpm operation, and CD-4 capability. Price includes base and your choice of Shure M91ED or Empire 2000E/111 cartridge. Specify cartridge with order. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1161, Shpg. wt. 11 lbs. **109.95**

ACCESSORIES FOR ALL B·I·C TURNTABLES

ADP-1163, Solid oiled walnut base, Shpg. wt. 4 lbs. **16.95**

ADP-1164, Hinged dustcover, Shpg. wt. 4 lbs. **9.95**

ADP-1165, 45-rpm spindle, Shpg. wt. 1 lb. **3.95**



SAVE UP TO $34.90

$79.95

With Base, Dust Cover and Cartridge

If purchased separately, up to $114.85

4 Garrard 440M 3-Speed Turntable System

Precise record playing system ideal for lower priced stereo setups. Has heavy-duty 4-pole induction surge motor, viscous damped pause/cue control, adjustable anti-skate. Low-mass aluminum tonearm, swing-away overarm for easy single-play operation. With Pickering V 15/ATE-4 elliptical diamond stylus magnetic stereo cartridge, base and dust cover. Fully assembled and balanced in factory. 14⅜" W x 12½" D x 8½" H, including base and dust cover.

ACP-1119, Shpg. wt. 17 lbs. **79.95**

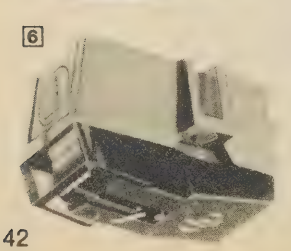
NOTE: When ordering turntable, please specify cartridge and base model numbers on order blank.



5 Shure V-15 Type III Stereo Cartridge

Famous for its excellent tracking ability and smooth, uncolored sound. For tonearms capable of tracking at ¾ to 1¼ grams. See specs at right.

AD-1059, Shpg. wt. 1 lb. **85.00**
With turntable purchase **45.00**



6 Audio-Technica AT-14S Cartridge

Features specially shaped and polished Shibata stylus for unparalleled quadraphonic CD-4 and stereo response. Stylus lasts twice as long as ellipticals! Specs at right.

ADP-1139, Shpg. wt. 1 lb. **69.95**
With turntable purchase **35.00**

Heath-Approved High-Performance Cartridges

Model	Frequency Response (Hz)	Output	Separation	Elliptical Stylus	Tracking	Price Separately	Price With Turntable
ADP-1062, Wt. 1 lb. Shure M91 ED	20-20,000	5.0 mV	25 dB	0.2 x 0.7	¾ to 1½ gr.	59.95	FREE
ADP-1147, Wt. 1 lb. Empire 2000E/111	5-35,000	5.0 mV	35 dB	0.2 x 0.7	½ to 1½ gr.	69.95	FREE
AD-1059, Wt. 1 lb. Shure V-15 Type III	10-25,000	3.5 mV	28 dB	0.2 x 0.7	¾ to 1¼ gr.	85.00	45.00
ADP-1139, Wt. 1 lb. Audio-Technica AT-14S	5-45,000	2.7 mV	25 dB	Shibata	1-2	69.95	35.00

Save 5% with Heath's hi-fi system discount — see page 43.

Turntable packages and save up to $86.90

[7] The belt-drive automatic from Dual

The incredible Dual 1249. Features include: Belt drive. Gimbal-mounted tonearm with selectable tracking angles for automatic and manual play. Strobe, variable pitch, CD-4 compatibility, 33⅓ and 45 rpm operation. Includes base and choice of Shure M91ED or Empire 2000E/111 cartridge. Or, add $45 for Shure V-15 Type III or $35 for Audio-Technica AT-14S cartridge. 4½" H x 14¾" W x 12⅛" D, less base.

ACP-1148, Shpg. wt. 16 lbs. **279.95**
ADA-49-1, Walnut-stained wood base, Shpg. wt. 5 lbs. **16.95**
ADA-49-4, Dustcover, Shpg. wt. 5 lbs. **15.95**
ADA-39-2, 45-rpm spindle, Shpg. wt. 1 lb. **9.95**

SAVE UP TO $86.90
$279.95
With Base and Cartridge
If purchased separately, up to $366.85

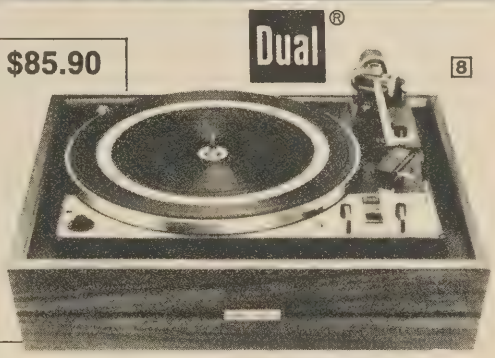


[8] Popular Dual 1228 Automatic Turntable

Superb performance and reliability — 0.5 gram tracking; pitch control, illuminated strobe, damped cueing; synchronous motor; 4 lb. platter; anti-skating, 33⅓ and 45-rpm operation, CD-4 compatible. Includes base and your choice of a Shure M91 ED or Empire 2000E/111 cartridge. 13" W x 10¾" D x 5" above motor board, 2⅝" below.

ACP-1142, Shpg. wt. 18 lbs. **199.95**
ADA-39-1, Walnut-stained wood base, Shpg. wt. 5 lbs. **15.95**
ADA-1218-1, Dustcover, Shpg. wt. 3 lbs. **12.95**
ADA-39-2, 45-rpm spindle, Shpg. wt. 1 lb. **9.95**

SAVE UP TO $85.90
$199.95
With Base and Cartridge
If purchased separately, up to $285.85



[9] Garrard Belt-Drive Automatic Turntable

The Garrard Z 2000B combines the famous Zero Tracking Error tonearm with the reliability of a belt-drive mechanism. Has damped cueing, magnetic anti-skating, strobe, 33⅓ and 45 rpm operation. Compatible with CD-4. Includes base and Shure M91ED or Empire 2000E/111 cartridge. 15 5/16" W x 14⅛" D x 4⅜" above mounting board, 2 15/16" below.

ACP-1179, Shpg. wt. 18 lbs. **229.95**
ADP-1178, Walnut-grained vinyl-clad base, Shpg. wt. 7 lbs. **15.95**
ADP-1177, Dustcover, Shpg. wt. 3 lbs. **9.95**
ADA-100-2, 45-rpm spindle, Shpg. wt. 1 lb. **5.95**

SAVE UP TO $85.90
$229.95
With Base and Cartridge
If purchased separately, up to $315.85



[10] Thorens TD-160C Belt-Drive Manual Turntable

High performance combined with the simplicity and reliability of a manual turntable. A 16-pole synchronous motor, belt-drive and a massive 7 lb. platter virtually eliminate rumble, wow and flutter. Precision gimbal suspension and magnetic anti-skating let you use the finest cartridges. Viscous-damped cueing; 33⅓ and 45-rpm speeds. Includes walnut-stained wood base and hinged dustcover, your choice of a Shure M91 ED or Empire 2000E/111 cartridge. Or, add $45 for Shure V-15 Type III or $35 for Audio-Technica AT-14S cartridge. 7¾" H x 17" W x 13½" D.

ACP-1099, Shpg. wt. 26 lbs. **230.00**

SAVE UP TO $69.95
$230.00
With Base and Cartridge
If purchased separately, up to $299.95



SAVE 5% when you order a complete audio system from Heath

Here's another way Heath helps you get more good sound for your money. You can select exactly the components you want using the blank at right. Here's how — 1) order a receiver and a pair of speakers or 2) order an amplifier, a pair of speakers and a program source (tuner, turntable or tape deck). Add the costs of the individual components, then deduct 5%. That's the low Heathkit system price.

The same 5% discount applies to any audio accessories you ordered with your system — remote or rear-channel speakers, an equipment cabinet, tape deck, turntable, audio 'scope or headphone control box. The only exception is the CR-1000A automotive FM tuner.

	Price
Receiver	
Amplifier	
Tuner or Tape Deck	
Speakers	
Changer & Cartridge	
Other Accessories	
Total Price	
Less 5% Discount	
Heath System Price	

This Heathkit Wireless Security System gives

Heathkit FM Wireless Security System — priceless peace of mind at a price you can afford

Protect your family and home — even your business — from thieves, fire, vandals — almost any kind of emergency. Our GD-1158 Security System provides the kind of protection and peace of mind you expect from expensive commercial systems — but at a fraction of their cost.

The GD-1158 System is wireless — just plug the modules into any AC outlet, no other connecting wires necessary. All signals are frequency modulated (FM) to prevent false triggering caused by power line noise. And "wireless" design means your system can easily be moved to a new home or expanded to meet your changing needs.

The "heart" of the GD-1158 System is the Central Processor which sounds the alarm whenever it receives a signal from one of the remote modules. This "modular" design provides exactly the protection you need, when you need it — an Ultrasonic Detector protects large areas from intrusion; an Auxiliary Transmitter handles optional heat and smoke detectors as well as contact and pressure switches, and the Emergency Transmitter is a "panic button" so you can sound the alarm. For added convenience and security, only the On/Off Transmitter can disable the Central Processor and turn the system off.

Don't leave your family unprotected. The GD-1158 Security System can prevent an emergency from becoming a tragedy.



1 Central Processor Module

The Central Processor responds to signals from any of the optional modules. To protect against intruders, it sounds the alarm if it receives a signal from an ultrasonic detector or auxiliary transmitter module. As an emergency alarm, it monitors optional heat and fire detectors and can also be triggered by the optional "panic button." And the Central Processor is protected from tampering by a circuit that sounds the alarm if AC power is lost. The Central Processor is designed for your convenience as well as security. A time delay lets you enter or leave the protected area without triggering the alarm. The Central Processor also automatically resets itself within two minutes after the cause of the alarm has been removed. Includes built-in siren and outputs for an external speaker (such as GDA-1158-7) and telephone dialer. Less batteries.

Kit GDA-1158-1, Shpg. wt. 8 lbs. **159.95**



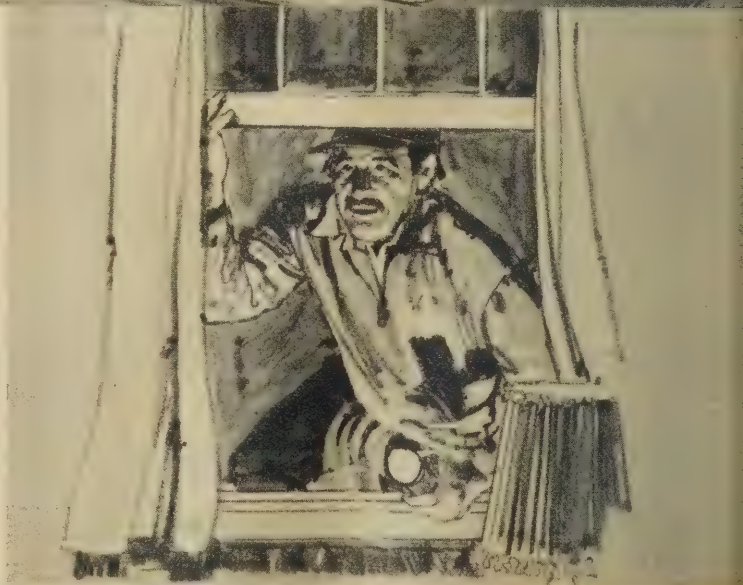
GDA-1158-1 SPECIFICATIONS

Power requirement: 115 VAC, 60 Hz. **Carrier frequencies:** emergency, 40 kHz. intrusion, 56 kHz. **Range:** any point on same power distribution transformer secondary. **Exit time:** 2 minutes. **Entry time:** 20 seconds. **Emergency activation time:** 2 seconds. **Disable time:** 1.5 sec. **Outputs:** external speaker; relay contacts; telephone dialer. **Sound source:** switchable internal speaker; or optional external speaker (12 watts into 8 ohms). **Sound level at 10 ft.:** internal speaker, +88 dB. **Dimensions:** 4½" H x 10⅞" W x 6" D.

2 Emergency Transmitter Module

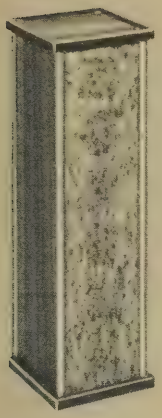
No security system is complete without a dependable "panic button." So to provide that extra peace-of-mind and security, we've included this Emergency Transmitter Module in the design of the Heathkit Home Security System. The GDA-1184-4 sounds the alarm instantly, at the touch of a button. In any emergency situation, all you have to do is push the button and the unit transmits a signal to the Central Processor for an alarm. Put one in the bedroom, kitchen, den — anyplace where needed. Then just plug it into the nearest AC outlet. It's one of the extras that we feel makes the big difference between an "adequate" security system and one that gives you the added margin of protection your family deserves. 1¾" H x 5" W x 3¾" D.

Kit GDA-1158-4, Shpg. wt. 2 lbs. **29.95**



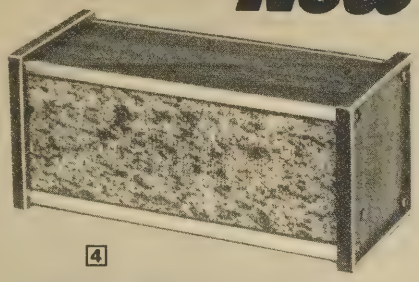
Charge a kit — no money down on any kit — see page 50 for details.

your home and family the protection they deserve



3 ***Monitors an area up to 300 sq. ft. with safe, silent, effective protection***

New



4

Use with Central Processor or by itself for reliable fire protection

3 Ultrasonic Detector Module

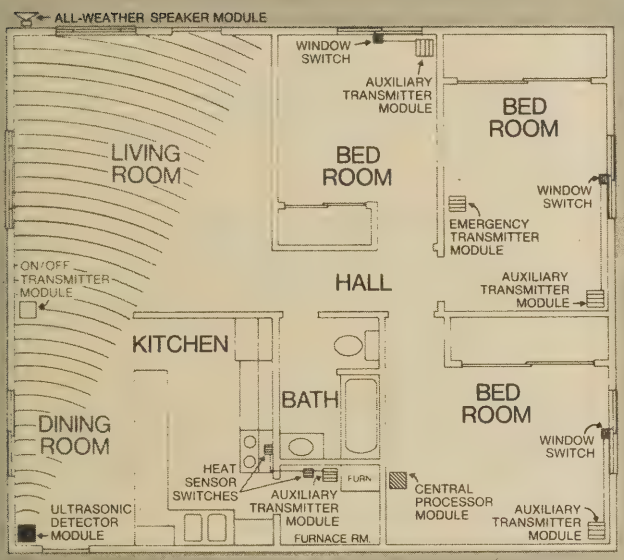
You can place any number of these ultrasonic detectors within your customized security system. Each unit plugs directly into an AC outlet and monitors an area of up to 300 sq. ft. The range of each unit is up to 20 feet. The detectors use harmless, inaudible high frequency sound waves to detect movement within the protected area. If an intruder enters the area, the detector will transmit a signal to the Central Processor which sounds the alarm. 10⅝″ H x 3¼″ W x 3¼″ D.

Kit GDA-1158-2, Shpg. wt. 3 lbs. **74.95**

4 Early Warning Fire Detector

An important new addition to this complete security system. A sensitive semiconductor detector detects gases generated in early stages of combustion — *sounds the alarm before the point of flames or intense heat.* Hooks up to Central Processor, or can be used alone with its built-in speaker. Also has thermal switch which actuates alarm when temperature exceeds 133°F (56°C). 3¼″ H x 7¼″ W x 3¼″ D.

Kit GDA-1158-5. Shpg. wt. 4 lbs. **74.95**



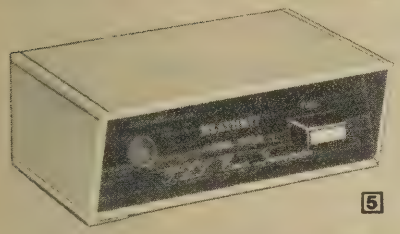
Typical installation for complete home security

Our Heathkit Security System is designed for maximum versatility in your home. You can locate modules wherever you need them... even move them from room to room, to create a total home protection system. Use it to protect your business, too.

The unique modular design of the Heathkit Security System means you can start with a modest investment, then add components to fit your requirements...and your budget.

Easy, step-by-step instructions guide you through the complete assembly of your new security system. And installation couldn't be easier. All components plug into regular wall sockets and use your home or building's AC power line to transmit signals to the Central Processor.

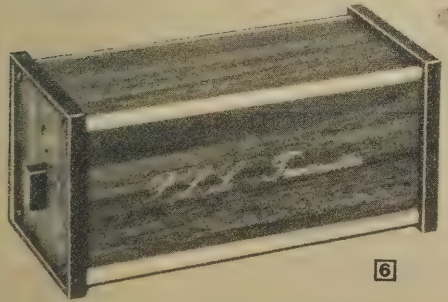
Act today. Get this dependable security system into your home or business...for the protection you want and need.



5



7



6

5 On/Off Transmitter Module

The **only** way in which the intrusion part of your security system can be deactivated. Just plug the unit into an AC outlet in any convenient location, then push the button in to disable the intrusion circuits of the Central Processor. To turn the Central Processor back on again, just release the button, or unplug the transmitter. 1¾″ H x 5″ W x 3¾″ D.

Kit GDA-1158-3, Shpg. wt. 2 lbs. **29.95**

6 Auxiliary Transmitter Module

Lets you add door and window switches, mat pressure switches and any other switches to the system. Switches must be either all normally open (N.O.) or all normally closed (N.C.) types. The transmitter then relays signals from the connected devices to the Central Processor. Plugs into any convenient AC outlet. 3¼″ H x 7¼″ W x 3¼″ D.

Kit GDA-1158-6, Shpg. wt. 2 lbs. **39.95**

7 Outdoor Speaker

The GDA-1158-7 Speaker provides more than enough volume to be heard throughout your neighborhood...loud enough to frighten any would-be intruders and summon help. The speaker's all-weather design lets you mount it indoors or out. All necessary mounting hardware is included. Attaches to the Central Processor.

GDA-1158-7, Shpg. wt. 3 lbs. **19.95**

Heath Security—protection that works full-time



Uses the same ultrasonic detection system widely used in banks and commercial establishments.

$59.95

"The Informer®" Ultrasonic Alarm

The Heathkit GD-39 Ultrasonic Intrusion Alarm sits quietly on bookshelf or table until something or someone invades its field of surveillance. Then "The Informer" can activate indoor buzzer alarms, outdoor bells, table or floor lamps...to alert you to the possible presence of an intruder as far as 25 ft. from the unit. Any movement that interrupts that transmitted signal in the room is perceived by the receiver, and the lamp outlet is triggered, turning on table or floor lamps. Approximately 30 seconds later, the alarm outlet is triggered, activating indoor or outdoor alarms. Built-in time delay between light and alarm allows you to enter room and deactivate the "Informer" without triggering the audible alarm. You can set the lamp and alarm for automatic reset after 25 seconds or have audible alarm continue to sound until the unit is manually reset.

NOTE: As the GD-39 Ultrasonic Alarm operates in the same frequency range as Ultrasonic TV Remote Controls, interference between the two is possible.

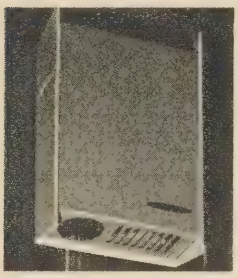
Kit GD-39, Shpg. wt. 5 lbs. **59.95**
GDA-39-1, indoor buzzer alarm, Shpg. wt. 3 lbs. **9.95**
GDA-39-2, outdoor bell, Shpg. wt. 6 lbs. **26.95**

GD-39 SPECIFICATIONS

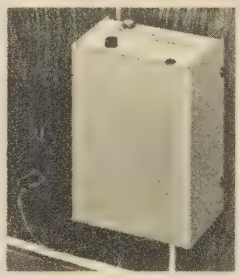
Operating range: Varies with installation. Typical maximum range is 25 ft. Operating times: Turn-on delay: approximately 10 sec. Alarm delay: 20 to 30 sec. (lamp-on time). Automatic reset delay: 20 to 30 sec. (alarm-on time). Power outlets: Two AC sockets: One for Lamp, one for Alarm. Power outlet current: Three amperes total for both. Power requirement: 120/240 VAC, 60/50 Hz, 1½ watts. Dimensions: Chassis only, 2" W x 9¼" H x 7½" D (approximately). In book-style cover, 2⅜" W x 10⅛" H x 7½" D (approximately).



1



2



3

Alarm devices 1, 2 and 3 are designed for use together to provide a very effective wireless protection system for your entire house. Simply plug each unit into existing AC outlet, NO OTHER WIRING needed for signals!

1 Early-Warning Receiver Alarm

For use with the Heathkit Fire Detector/Transmitter and Utility Transmitter to alert your family to intrusion, fire, freezing, power failure, etc. Emits piercing tone to raise the soundest sleeper. Has continuously charged nickel-cadmium battery to trigger Receiver Alarm in case of power failure. Just plug into 110 VAC, no other wiring needed to receive signals.

Kit GD-77, Shpg. wt. 3 lbs. **56.95**

2 Fire detector/transmitter

The Heathkit fire detector/transmitter triggers the Receiver Alarm upon detecting very low density smoke or 133°F. heat. Photocell smoke detector. Adjustable sensitivity. Remote heat sensors can be added. Uses AC line to transmit signal to GD-77 receiver.

Kit GD-87A, Shpg. wt. 4 lbs. **56.95**

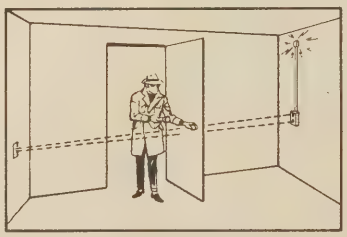
3 Utility transmitter

The Heathkit Utility transmitter accepts any switch or sensor that produces a closed circuit, such as Heathkit GDA-97-1 miniature magnetic-reed switch or GDA-97-2 miniature micro switch for doors and windows, or new, improved easily-mounted heat sensor switch GDA-97-4 (135°F). Uses AC line to transmit signal to GD-77 receiver.

Kit GD-97, Shpg. wt. 3 lbs. **42.95**
GDA-97-1, Mini reed switch, Shpg. wt. 1 lb. **2.75**
GDA-97-2, Micro switch, Shpg. wt. 1 lb. **3.00**
GDA-97-4, Heat sensor, Shpg. wt. 1 lb. **3.50**



4

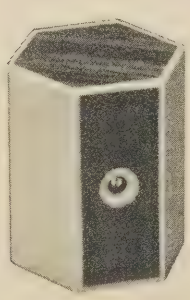


Sounds alarm when light beam is broken!

4 Heathkit Eye Spy™ photobeam relay

The kit consists of a light source, a mirror assembly, and a photo-cell controlled relay which is activated whenever the reflected light beam is broken, thereby energizing the AC socket on the light source unit. Any warning devices or lamps plugged into this socket are then activated. When light beam is no longer obstructed, the photo relay shuts off power to the alarm. Unit operates at distances of up to 25 ft. from reflecting mirror. Electronic package measures 5⅜" H x 4⅜" W x 5¼" D. Mirror assembly measures 5" H x 4" W x 2¾" D.

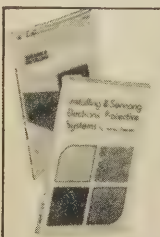
Kit GD-1021, Shpg. wt. 2 lbs. **14.95**



Photoelectric Lamp Switch

Turns lights on in the evening, off in the morning — automatically. Helps discourage burglars while you're away from home. Just plug it in to any wall outlet, adjust the sensitivity and the GD-600 does the rest. For incandescent lamps up to 150 watts. A great 1-evening get-acquainted kit.

Kit GD-600, Shpg. wt. 1 lb. **5.95**



Start your own profitable security system career — these books show you how:

Building & Installing Electronic Intrusion Alarms — covers construction, installation & maintenance of all types of alarms & sensors for home & auto. **EDP-135.... 4.50**

Installing & Servicing Electronic Protective Systems. Covers virtually every electronic fire & theft security system. **EDP-136** **5.95**

See page 48 for book ordering information.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Build yourself Heathkit electronic convenience

[1] Ultra-convenient ultrasonic Cleaner

Get the benefits of ultrasonic cleaning for those almost impossible cleaning chores. The Heathkit GD-1150 makes fast work of deep-cleaning watch parts, most jewelry, glass and contact lenses (except plastic), dentures, and even decorator paint brushes. Great for phono cartridge stylus too! Simply fill the stainless steel tank with any safe detergent or solvent for the item to be cleaned. Place the object or objects in the tank, set the timer and that's it! You'll be amazed how quickly and easily your possessions come clean. Professional artists, jewelers and watchmakers have known about and used ultrasonic cleaning equipment for years. Now this low-cost kit-form cleaner lets everyone take advantage of this scientific clean-up process. Tank measures 6″ L x 4″ W x 2⅜″ D. Overall, 11″ L x 5¾″ W x 3⅛″ H.

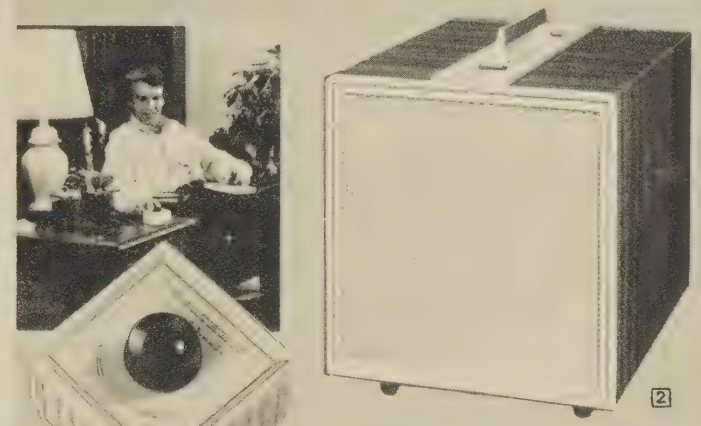
Kit GD-1150, Shpg. wt. 4 lbs. **64.95**



[2] Room-size electronic Air Cleaner

Clean air is important in maintaining the overall good health of your family. And the Heathkit GD-1003 cleans the air of 99% of airborne pollen and 95% of other contaminants...regardless of size or concentration. Plugs into any 120 VAC electrical outlet. A two-speed fan moves large volumes of air — fast — in the "high" position, and provides whisper quiet continuous operation in the "low" position. The big, efficient 5-bladed fan is lifetime lubricated for trouble-free operation. Everything's accessible for easy cleaning, too. A built-in safety interlock switch offers positive shock-hazard protection while cleaning (should you forget to unplug the unit), and against the prying fingers of small children. Cabinet of wood-grained vinyl-coated steel measures 15″ H x 13½″ W x 17¾″ D.

Kit GD-1003, Shpg. wt. 55 lbs. **149.95**



[3] Heathkit Tabletop Lamp Dimmer

A great kit for first-time builders! Set the mood for any activity with just the right amount of light — reading, watching TV. The GD-1018 smoothly adjusts the brightness of table or floor lamps up to 300 watts. Eliminates annoying burned out elements in 3-way bulbs. It'll save energy, too, by giving you just the light you need — it even helps bulbs last longer. Just plug the lamp into the dimmer, then plug the dimmer into any standard household outlet. It's easy to assemble too — goes together in a single evening. For 120 VAC. Makes a great heat-control, too, for pencil-type soldering irons used in circuit board work, installing ICs, etc. Measures 3¼″ H x 3¼″ W x 3¼″ D.

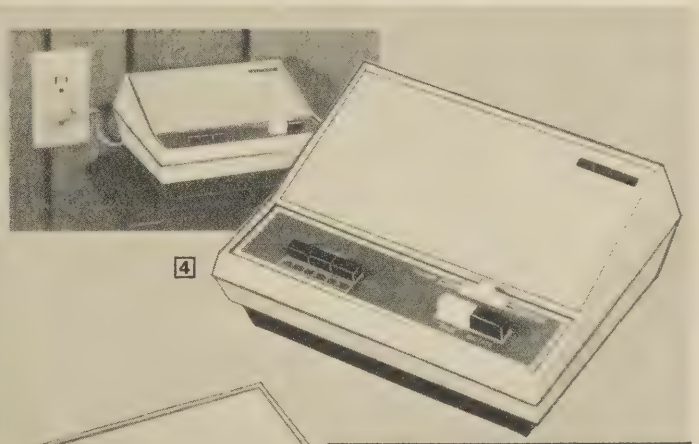
Kit GD-1018, Shpg. wt. 2 bs. **7.95**

FREE SERVICE OFFER: During the normal 90-day warranty period we will service your Heathkit Lamp Dimmer at no charge — regardless of the nature of the problem. Simply return the kit to the factory or any Heathkit Electronic Center.

[4] Heathkit "Wireless" 3-Channel AM Intercom

Just build the intercoms you need, plug them into wall outlets—that's all there is to it. They use your home electric wiring for transmissions — and you can move units from room to room at will. Versatile 3-channel operation — ideal for multi-unit setups. Pushbuttons provide channel selection, "Talk" mode, and "Dictate" position. Volume control, internal squelch. Each GD-113 uses about as much current as an electric clock. Attractive light green cabinet 4⅛″ H x 8½″ W x 6¾″ D.

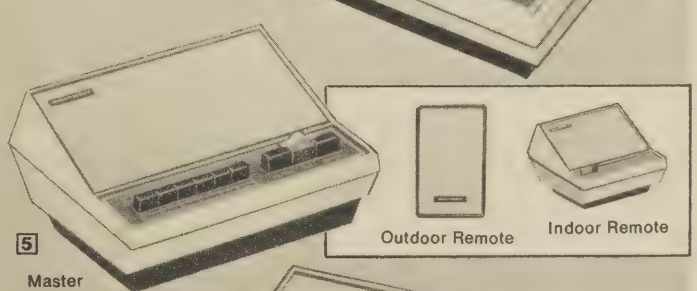
Kit GD-113, Shpg. wt. 4 lbs. **34.95**



[5] Indoor/Outdoor Intercom System

Master functions include "All Call," "Talk," "Dictate"...plus monitoring of up to four Remotes. Indoor Remotes can be rendered private to prevent monitoring. GD-110 and GD-120 are light green and measure respectively 4½″ H x 8½″ W x 6¾″ D and 3¾″ H x 6″ W x 5¾″ D. GD-130 has weatherproof crinkle finish. 5⅜″ H x 3⅝″ W x 2⅝″ D.

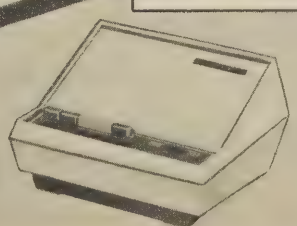
Kit GD-110, Master Station, Shpg. wt. 5 lbs. **44.95**
Kit GD-120, Indoor Remote, Shpg. wt. 2 lbs. **12.95**
Kit GD-130, Outdoor Remote, Shpg. wt. 2 lbs. **9.95**
GDA-110-2, 100′ 4-conductor cable, Shpg. wt. 2 lbs. **8.95**
GDA-110-4, 100′ 2-conductor outdoor cable, Shpg. wt. 2 lbs. **4.95**



[6] Heathkit 2-Station Intercom System

Master station accommodates up to two remotes. Remotes can initiate "private" calls to Master. Master can call either or both remote stations. Master controls include Sta. 1, Sta. 2, Talk, Dictate, & Volume. Remotes have Talk & Dictate controls. 3″ x 5″ microphone-speakers for crisp, clear sound. Low-profile cabinets with plastic feet for surface use, holes for wall mounting. 3¾″ H x 6″ W x 5¾″ D.

Kit GD-140, one Master, one Remote, Shpg. wt. 4 lbs. **32.95**
Kit GD-120, one extra Remote, Shpg. wt. 2 lbs. **12.95**
GDA-110-2, 100′ 4-conductor cable, Shpg. wt. 2 lbs. **8.95**



Find out how easy it is to build a kit — order the manual. See page 49.



Here's how to order your Heathkit Equipment

BY PHONE:

Use the Heath "Hotline", Call

(616) 982-3411

SAVE ENERGY



SHOP BY MAIL OR PHONE

BY MAIL:



- **Fill out the order blank completely.** Print your name exactly the same each time you order. When you print an address, please give full details including your Zip Code and phone number.

Heath has a phone order desk open 24 hours a day, 7 days a week. You can call in your order at minimum cost from most areas in the country, and after-hour rates are a bargain.

Replacement Parts Orders: 616-982-3571. Use this number for parts orders, weekdays only, from 8 A.M. to 4:30 P.M., EST.

Other Important Heath Company Phone Numbers:

International Sales: 616-982-3512

General Office: 616-982-3200

USE THESE NUMBERS FOR TECHNICAL HELP

8 A.M. to 4:30 P.M., EST, weekdays only

- R/C, Audio and Electronic Organs . . . . . (616) 982-3310
- Amateur Radio . . . . . (616) 982-3296
- Test Equipment, Strobe Lights, Calculators, Clocks, Weather Instruments . . . . . (616) 982-3315
- Television . . . . . (616) 982-3307
- Automotive, Marine, Metal Locators, Appliances, Security, Shortwave and General Products . . . . . (616) 982-3496

Book Ordering Information

There is a $10 minimum order for a BOOK ONLY purchase. No minimum on books purchased with kits. Do not calculate postage on book orders, just add 35¢ for each book to the postage column on the order blank. Do not use the zone chart for book orders.

Discounts on Heathkit Continuing Education Programs

Enjoy a 15% discount on the purchase price of 10 or more of any one item from our Continuing Education product line. For information on quantities greater than 100 of an individual item, contact our Contract Sales Dept., Mr. Richard Shadler, Mgr. (616) 982-3519.

- **Please give full ordering information.** Be sure to give model number, description and price, exactly as shown in the catalog.
- **Total up your order.** Please refer to the chart and calculate shipping charges of each item separately, and total up amount. All items are mailable unless indicated "Exp./Frt.". These items sent transportation charges, collect.
- **Insurance for mailable items:** The 1st $100 value of insurance is free. Insurance rates for orders over $100: add 25¢ for each additional $100 value or fraction thereof.
- **Cash Orders:** Do not send currency or stamps. Send personal check, money order, etc. NOTE: If the charge for merchandise and transportation is less than the amount you send us, we will refund the difference.
- **Heath Revolving Charge Plan:** No money down. Up to two years to pay. Two convenient payment plans. Follow instructions on the reverse side of order blank. Be sure to sign charge agreement.
- **C.O.D.** — 20% deposit is required on C.O.D. orders placed by mail. Balance will be collected at time of delivery, and payment must be made in cash, as carriers usually will not accept personal checks. (C.O.D. fee for mailable items must be included with your remittance.)
- **ROUTING YOUR ORDER:** Heath will find the fastest service to your area by surface transportation. If you have a routing preference, please indicate on the order blank. West Coast customers should mention their choice of UPS Blue Label Service over regular UPS.
- **NON-MAILABLE ITEMS:** The Heathkit products shown as "Exp./Frt." are shipped by truck because these exceed weight and/or size limitations for mailing. Items are shipped with freight charges collect. Examples: Most TV antennas, large TV's, organs, cabinets, speaker systems and garage door mechanisms.
- **APO/FPO SHIPMENTS:** We can send Heathkit models that are able to be mailed to servicemen anyplace in the world. For APO and FPO addresses, use the following Zones to estimate cost: West Coast — Zone 8; East Coast — Zone 5. PAL (Airlift Military) carries packages by air transport for a fee of $1 per parcel in addition to regular postage rates. Parcel must weigh less than 30 lbs. and not exceed 60 in. in length and girth.

  SAM: Parcel must weigh less than 15 lbs. and not exceed 60 in. in length and girth combined. Be sure to check with your local Postmaster for exceptions to certain APO or FPO numbers.

HOW TO FIGURE SHIPPING & HANDLING CHARGES

Use the zone chart below and the **first** three numbers of your zip code to determine your zone. Then refer to the Heath shipping rate chart at right for charges for each model per shipping weight given in each price line.

The 1st $100 value of insurance is free. Insurance rates for orders over $100 add 25¢ for each additional $100 value or fraction thereof.

Rate chart is for "mailable" items only. "Exp./Frt." items will be shipped transportation charges collect.

If you have one item on your order which must be sent "Exp./Frt.", ALL items on that order will be sent "Exp./Frt."

Zip Code Prefixes	Zone
006-009	8
010-069	5
070-089	4
090-099	5
100-108	5
109	4
110-119	5
120-123	4
124-126	5
127-128	4
129	5
130-152	4
153	3
154-160	4
161	3
162-163	4
164-165	3
166-199	4
200-232	4
233-237	5
238-259	4
260-261	3
262-278	4
279	5
280-283	4
284-285	5
286-293	4
294-295	5
296-297	4
298-299	5
300-303	4
304	5
305-307	4
308-329	5
330-334	6
335-338	5
339	6
350-352	4
354	5
355-359	4
360-361	5
362	4
363-369	5
370-386	4
387	5
388	4
389-397	5
400-406	3
407-409	4
410-412	3
413-422	4
423	3
424-426	4
427-432	3
433-436	2
437-457	3
458	2
460-462	3
463-464	2
465-466	1
467-469	2
470-472	3
473	2
474-475	3
476-477	4
478	3
479-489	2
490-491	1
492	2
493-495	1
496-499	3
500-516	4
520-524	3
525	4
526-528	3
530-534	2
535-539	3
540	4
541-546	3
547-548	4
549	3
550-566	4
567	5
570-572	4
573-588	5
590-597	6
598-599	7
600-609	2
610-619	3
620-623	4
624-628	3
629-668	4
669-679	5
680-687	4
688-693	5
700-722	5
723-727	4
728-768	5
769	6
770-778	5
779-789	6
790-792	5
793-799	6
800-803	5
804-805	6
806-807	5
808-816	6
820-822	5
823-826	6
827	5
828-832	6
833	7
834	6
835-838	7
840-847	6
850-864	7
865-884	6
890-898	7
900-921	8
922-928	7
930-934	8
935	7
936-960	8
961	7
962-976	8
977-979	7
980-987	8
988-994	7
995-999	8

Heath Shipping Charges

(Mailable items only)

Shipping Weight	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	BLUE LABEL AIR SERVICE CHARGE to Calif., Ore., Wash. only.
1	$0.66	$0.68	$0.70	$0.73	$0.76	$0.80	$0.85	$0.95
2	0.72	0.75	0.83	0.92	1.02	1.12	1.21	1.30
3	0.78	0.83	0.92	1.04	1.18	1.32	1.45	1.65
4	0.84	0.90	1.01	1.16	1.33	1.51	1.69	2.00
5	0.90	0.98	1.10	1.28	1.49	1.71	1.93	2.35
6	0.96	1.05	1.20	1.40	1.64	1.90	2.17	2.70
7	1.02	1.13	1.30	1.52	1.80	2.10	2.41	3.05
8	1.08	1.20	1.40	1.64	1.95	2.29	2.65	3.40
9	1.14	1.28	1.50	1.76	2.11	2.49	2.89	3.75
10	1.20	1.35	1.60	1.88	2.26	2.68	3.13	4.10
11	1.26	1.43	1.70	2.00	2.42	2.88	3.37	4.45
12	1.32	1.50	1.80	2.12	2.57	3.07	3.61	4.80
13	1.38	1.58	1.90	2.24	2.73	3.27	3.85	5.15
14	1.44	1.65	2.00	2.36	2.88	3.46	4.09	5.50
15	1.50	1.73	2.10	2.48	3.04	3.66	4.33	5.85
16	1.56	1.80	2.20	2.60	3.19	3.85	4.57	6.20
17	1.62	1.88	2.30	2.73	3.35	4.05	4.81	6.55
18	1.68	1.95	2.40	2.85	3.50	4.24	5.05	6.90
19	1.74	2.03	2.50	2.98	3.66	4.44	5.29	7.25
20	1.80	2.10	2.60	3.10	3.81	4.63	5.53	7.60
21	1.86	2.18	2.70	3.23	3.97	4.83	5.77	7.95
22	1.92	2.25	2.80	3.35	4.12	5.02	6.01	8.30
23	1.98	2.33	2.90	3.48	4.28	5.22	6.25	8.65
24	2.04	2.40	3.00	3.60	4.44	5.41	6.49	9.00
25	2.10	2.48	3.10	3.73	4.60	5.61	6.73	9.35
Add'l lbs.	.06/ lb.	.08/ lb.	.10/ lb.	.13/ lb.	.16/ lb.	.20/ lb.	.24/ lb.	.35

IMPORTANT: 1. Shipping weights listed for model numbers shipped in more than one carton have been adjusted to provide correct postage.

NAME _____

ADDRESS _____

CITY & STATE _____ ZIP _____

Put Stamp here. The Post Office will not deliver mail without postage.

HEATH COMPANY
BENTON HARBOR,
MICHIGAN 49022

NOW...
no purchase necessary to open your Heath Revolving Charge Account ...



Have you Enclosed Your Order, with Check, Money Order, or Your Account Number?

THANK YOU FOR SHOPPING HEATH.

see order form for details

HEATH

charg·a·kit

REVOLVING CHARGE

Enjoy your favorite Heathkit product NOW — the easy way — by filling out and mailing the Heath Revolving Charge Account application on the back of the order form. No purchase necessary. Once your account is opened, a phone call or letter will send your order on its way to you — NO CASH REQUIRED.

Heathkit Catalogs for your friends...

Anyone interested in the satisfaction of doing things for themselves will enjoy the latest Heathkit Catalog — the world's largest electronic kit catalog. If you have friends you think would like to receive copies, simply jot down their names & addresses below, and we'll be happy to send them their own personal Heathkit catalogs.

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

YOUR MONEY-BACK MANUAL ORDER FORM

See how easy kitbuilding really is! "Shop" a Heathkit manual before you buy ...only $2 (except Color TV, Organs, SB-104, HW-104, AN-2016, EK & EF series which are $5) plus 50¢ each postage and handling. And we'll deduct the price of the manual when you buy the kit (just include the manual invoice with your kit order). Use this mini order blank for all manual orders. NOTE: This offer does not apply to EE-series Individual Learning Programs.



Use This Form For Manual Orders Only—Use Regular Order Blank For Book Orders

Enclosed is $_____ Please send me the following Heathkit manual(s): (I understand that the price of the manual will be refunded when I order the kit.)

MODEL NO.(S):_____

NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____ ZIP:_____

Note: When ordering Revolving Charge, please write current account number here to speed processing:

AA | | | | | | |

HEATH COMPANY
a Schlumberger company
Benton Harbor, Michigan 49022

ORDER FORM

PLEASE DO NOT WRITE IN THIS SPACE

1 Please Print or Write Plainly — Always Use the Same Name.

Name

Street Address

City

State Zip

TELEPHONE NUMBER ▶ AREA CODE ▼ YOUR PHONE NUMBER ▼

2 Ship To Another Address?

Name

Street Address

City

State Zip

3 We ship UPS for fastest delivery — indicate other preference below.

4 Include Zone from Chart

5 What new kits would you like us to make?

6 If you have moved since your last order, please give FORMER ADDRESS here

Name

Street Address

City

State Zip

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	1	2	3	4	5	6	7	8	9	
	P/L		COD		I		R		A/F		PAL		U		P		2	3	4	5	6	7	8	9	10	11	12	13	14	15						

QUAN.	MODEL NUMBER	KIT DESCRIPTION	WT.	PRICE EA.	TOTAL

IMPORTANT:

1. Please use separate sheet to order parts or for any correspondence.
2. All prices quoted are net FOB Benton Harbor, Mich., and apply to the U.S., FPO and APO areas.
3. Prices and specifications subject to change without notice.
4. MAILABLE ITEMS: Figure charges for each model separately using indicated shipping weight, then remit total of all charges.
5. "Exp./Frt." items are sent "Freight Collect."
6. If one item in an order is "Exp./Frt.", *all* items in that order will be sent "Exp./Frt." Do not send postage money.

When ordering, be sure to remove entire page

PLEASE DO NOT WRITE IN THIS SPACE

Heath Co. Catalog

7 808-500

If merchandise ordered from another catalog, please list Catalog No._____

10 TOTAL FOR MERCHANDISE. $

Add **4% Sales Tax** for deliveries in Michigan only.

For Mailable Items only

Total shipping charges here (see chart) $_____ + Insurance: 1st $100.00 FREE, 25¢ for each additional $100.00 or fraction $_____ =

8 TYPE OF ORDER (CHECK ONE)

- ☐ **CASH** Please use registered mail for currency.
- ☐ **C.O.D.** 20% deposit required. Also include 85¢ C.O.D. fee.
- ☐ **REVOLVING CHARGE** See reverse side for details.
- ☐ **ADD ON**

9 Is this your first order?

☐ YES ☐ NO

If no, list year of last purchase date:_____

Allowance if offered	
CASH PRICE	
Amount Due Previous Order. Inv. #_____	
TOTAL AMOUNT.	
LESS: Down Payment_____	
20% C.O.D. Deposit	
UNPAID BALANCE (Total Amount less Down Payment or C.O.D. deposit)	

Heath's Convenient Revolving Charge Plan

The "Cash Price" of merchandise on Heath's Revolving Charge Plans includes the cash price as listed on the page describing the merchandise, plus applicable sales tax, shipping charges, and less any advertised allowances. Regular or extended terms are the two plans available for your use. To use the extended plan, the balance must be at least $400. The amount of your monthly installment can be determined from the chart below. The **periodic rate** for the **FINANCE CHARGE is 1½%** per month and is equal to an **ANNUAL PERCENTAGE RATE of 18%** before deducting payments and credits or adding purchases made during the current billing period. No down payment is required on new orders but one may be remitted if desired. **HOW TO OPEN AN ACCOUNT.** Just fill out the credit application, sign the Revolving Charge agreement and mail to Heath with your order. **ADD-ON PURCHASES** List items you want on order blank, check the add-on box, and give your account number. Sign the Revolving Charge agreement, and send to us.

REVOLVING CHARGE AGREEMENT

TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022

I hereby purchase the merchandise listed on the reverse side at a time sale price which is the cash price including shipping charges and tax, if any, less down payment, if any, plus the **[FINANCE CHARGE]** which, in lieu of being added to this contract in total as of the date hereof will be added monthly on the previous month's ending balance of my account before deducting payments and credits or adding purchases made during the current billing period. **[FINANCE CHARGE]** will be assessed on the balance according to the following schedule or in accordance with the laws of the State of my residence which ever is the lesser.

Account Balance Amount
ALL BALANCES
[Periodic Percentage Rate]
1½%
[ANNUAL PERCENTAGE RATE]
18%

The minimum **[FINANCE CHARGE]** assessed will be .50¢ on all small balances. If within 30 days from my billing date I pay the full outstanding balance shown on my monthly statement, no **[FINANCE CHARGE]** on such balance, will be charged on any subsequent statement.

The highest level of my balance reflected by the payment chart will govern my monthly payment, beginning 30 days from the cycle closing date shown on the statement, until such time as the total unpaid balance of each purchase is fully paid (minimum $10). Regular or Extended Terms are the two plans available for my use. To use the extended plan, the balance of my account must be at least $400. The amount of my monthly installment can be determined from the charts below:

REGULAR REVOLVING CHARGE

Charge up to	$150	200	250	300	350	400	450	500	550
Pay Monthly	$10	15	20	25	30	35	40	45	50

EXTENDED REVOLVING CHARGE

Charge up to	$400	500	600	700	800	900	1,000	1,100	1,200
Pay Monthly	$20	25	30	35	40	45	50	55	60

Add $5 for every $100, or a portion thereof over $1,200.

I will not sell, transfer possession of, remove or encumber the property without your written consent: Upon default on the terms of this agreement, you may declare my existing outstanding balance due and payable and you may repossess the property. If legal proceedings are commenced, I will be required to pay reasonable attorney's fees in such an amount as may be allowed by the court. My installments shall be applied as follows: In case of items purchased on different dates, the first purchase shall be deemed first paid for. In the case of items purchased on the same date, the lowest price shall be deemed first paid for. You are authorized to investigate my credit record and report to proper persons and bureaus my performance of this agreement. **NOTICE TO BUYER: 1. Do not sign this agreement before you read it or if it contains blank spaces. You are entitled to a copy of the agreement you sign. 2. The other side of this page is part of this contract. 3. No FINANCE CHARGE if paid in full in 30 days from cycle billing closing date as shown on statement. 4. See accompanying statement regarding your rights to dispute billing errors.**

Date_____

Sign here_____
(Customer's Signature)

CREDIT APPLICATION

Check Revolving Charge Plan Desired
☐ Regular ☐ Extended

IMPORTANT: Please fill in completely. Omissions and errors cause delays. SIGN REVOLVING AGREEMENT ABOVE.

NAME_____
(Please Print) (First Name) (Middle Initial) (Last Name)

ADDRESS_____

CITY_____ STATE_____ ZIP CODE_____

If Military Give Rank_____

Number of Dependents_____ How Long at Present Address_____ No. of Rooms_____ OWN ☐ RENT ☐ BOARD ☐ Monthly Rent or Mortgage Payments $_____

Former Address_____ City_____ State_____ How Long_____

Phone No._____ AGE_____ MARRIED ☐ UNMARRIED ☐ SEPARATED ☐ Spouse's First Name_____

Employer_____ Address_____ City_____ State_____

How Long_____ Occupation_____ Social Security No._____ Military Serial No. (if in service)_____ EARNINGS $_____ Hr. ☐ Wkly. ☐

Former Employer_____ How Long_____

Name of Spouse's Employer_____ Address of Spouse's Employer_____ SPOUSE'S WEEKLY INCOME $_____

Other Income — Give Details_____ TOTAL FAMILY INCOME $_____

Your Bank_____ Address_____ Type of Account_____

CREDIT REFERENCE: (Give 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Nearest Relative_____ Address_____ Relationship_____
(Do not list those with whom you are living) (If Military give permanent mailing address)

When ordering, be sure to remove entire page

THE PRESIDENT'S CORNER

"Our best product ideas come from customers like you.

It was because of your suggestions that we recently introduced the Heathkit Continuing Education Series of Individual Learning Programs. They've already proven to be very popular.

Incidentally, I am well into the Digital Techniques program. Forty years have slipped by since college, so I find it a challenge. But I must add, I'm finding it both stimulating and enjoyable.

We plan to expand these self-study programs and have many ideas for new learning areas. But we'd be most interested to know your thoughts first. Are you interested in programs teaching automotive tune-up, amateur radio license requirements, first class technician licensing, TV servicing, computers, microprocessors or other areas?

If you have a particular area of interest, we would certainly appreciate hearing from you."

D. W. Nurse

D. W. Nurse President



Accompanying Statement Regarding Your Rights To Dispute Billing Errors

The Federal Truth in Lending Act requires prompt correction of billing mistakes.

1. If you want to preserve your rights under the Act, here's what to do if you think your bill is wrong or if you need more information about an item on your bill:

   a. Do not write on the bill. On a separate sheet of paper write (you may telephone your inquiry but **doing so will not preserve your rights under this law**) the following:

      i. Your name and account number (if any).

      ii. A description of the error and an explanation (to the extent you can explain) why you believe it is an error.

      If you only need more information, explain the item you are not sure about and, if you wish, ask for evidence of the charge such as a copy of the charge slip. Do not send in your copy of a sales slip or other document unless you have a duplicate copy for your records.

      iii. The dollar amount of the suspected error.

      iv. Any other information (such as your address) which you think will help the creditor to identify you or the reason for your complaint or inquiry.

   b. Send your billing error notice to the address on your bill which is listed after the words: "Send Inquiries to:."

      Mail it as soon as you can, but in any case, early enough to reach the creditor within 60 days after the bill was mailed to you. If you have authorized your bank to automatically pay from your checking or savings account any credit card bills from that bank, you can stop or reverse payment on any amount you think is wrong by mailing your notice so the creditor receives it within 16 days after the bill was sent to you. However, you do not have to meet this 16-day deadline to get the creditor to investigate your billing error claim.

2. The creditor must acknowledge all letters pointing out possible errors within 30 days of receipt, unless the creditor is able to correct your bill during that 30 days. Within 90 days after receiving your letter, the creditor must either correct the error or explain why the creditor believes the bill was correct. Once the creditor has explained the bill, the creditor has no further obligation to you even though you still believe that there is an error, except as provided in paragraph 5 below.

3. After the creditor has been notified, neither the creditor nor an attorney nor a collection agency may send you collection letters or take other collection action with respect to the amount in dispute; but periodic statements may be sent to you, and the disputed amount can be applied against your credit limit. You cannot be threatened with damage to your credit rating or sued for the amount in question, nor can the disputed amount be reported to a credit bureau or to other creditors as delinquent until the creditor has answered your inquiry. **However, you remain obligated to pay the parts of your bill not in dispute.**

4. If it is determined that the creditor has made a mistake on your bill, you will not have to pay any **FINANCE CHARGES** on any disputed amount. If it turns out that the creditor has not made an error, you may have to pay **FINANCE CHARGES** on the amount in dispute, and you will have to make up any missed minimum or required payments on the disputed amount. Unless you have agreed that your bill was correct, the creditor must send you a written notification of what you owe; and if it is determined that the creditor did make a mistake in billing the disputed amount, you must be given the time to pay which you normally are given to pay undisputed amounts before any more **FINANCE CHARGES** or late payment charges on the disputed amount can be charged to you.

5. If the creditor's explanation does not satisfy you and you notify the creditor **in writing** within **10** days after you receive his explanation that you still refuse to pay the disputed amount, the creditor may report you to credit bureaus and other creditors and may pursue regular collection procedures. But the creditor must also report that you think you do not owe the money, and the creditor must let you know to whom such reports were made. Once the matter has been settled between you and the creditor, the creditor must notify those to whom the creditor reported you as delinquent of the subsequent resolution.

6. If the creditor does not follow these rules, the creditor is not allowed to collect the first $50 of the disputed amount and **FINANCE CHARGES**, even if the bill turns out to be correct.

7. If you have a problem with property or services purchased with a credit card, you may have the right not to pay the remaining amount due on them, if you first try in good faith to return them or give the merchant a chance to correct the problem. There are two limitations on this right:

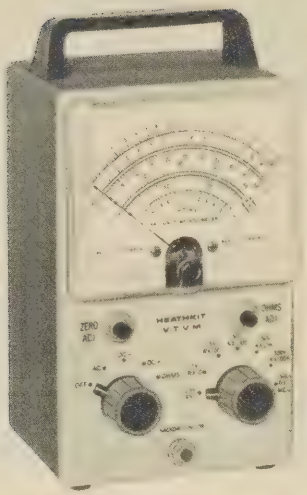
   a. You must have bought them in your home state or if not within your home state within 100 miles of your current mailing address; and

   b. The purchase price must have been more than $50.

   However, these limitations do not apply if the merchant is owned or operated by the creditor, or if the creditor mailed you the advertisement for the property or services.

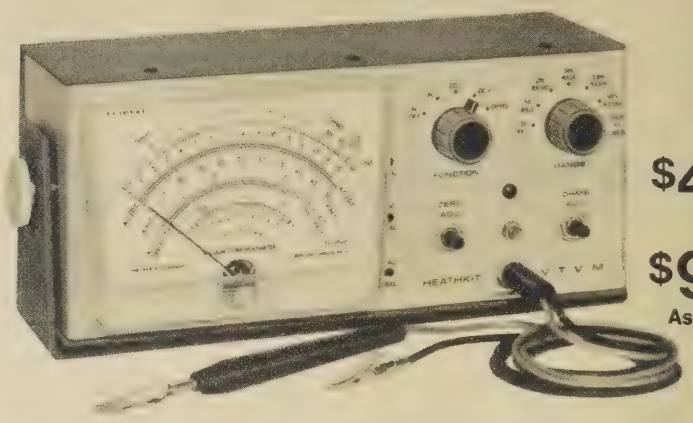
Get Heath Testers for that "extra measure"

Famous Heath VTVM's — you need one for your bench!



$36.95 Kit

$70.00 Assembled



$46.95 Kit

$90.00 Assembled

Heathkit IM-18—our most popular VTVM

Features single probe for all measurements — seven AC, seven DC, and seven Ohms ranges; precision 4½" 200 μA meter; 1% precision divider network resistors; ±1 dB 25 Hz to 1 MHz frequency response; rms & p-p AC voltage measurements; circuit board design for fast, easy assembly; 120/240 VAC wiring options.

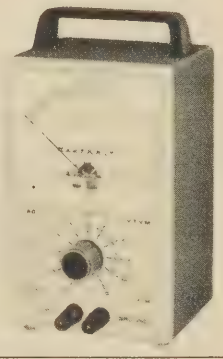
Kit IM-18, Shpg. wt. 5 lbs. **36.95**

Assembled SM-20A, Shpg. wt. 5 lbs. **70.00**

IM-18 SPECIFICATIONS

Meter scales: DC & AC (rms): 0-1.5, 15, 50, 150, 500, 1500 V full scale. **AC peak-to-peak:** 0.4, 14, 40, 140, 400, 1400, 4000 V full scale. **Resistance:** 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures 1 ohm to 100 megohms. **Meter:** 4½" 200 μA movement: **Input resistance:** 11 megohms (1 megohm in probe) on all DC ranges; 1 megohm shunted by 35 pF on all AC ranges. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ±3%, AC ±5% of full scale. **Frequency response:** ±1 dB, 25 Hz to 1 MHz (600 ohm source). **Battery requirements:** 1.5 V, size "C" cell (not supplied). **Power requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 7⅜" H x 4¹¹⁄₁₆" W x 4¼" D.

Heathkit Laboratory AC VTVM



The IM-38 features extended accuracy in measuring low-level AC voltages. Any voltage from 10 Hz to 1 MHz can be measured quickly. It can also be used as a VU meter to indicate changing AC voltages, such as those that occur in speech or music equipment.

Kit IM-38, Shpg. wt. 5 lbs. **52.50**

Assembled SM-22A, Shpg. wt. 5 lbs. **85.00**

IM-38 SPECIFICATIONS

Frequency response: ±1 dB 10 Hz to 500 kHz. ±2 dB 10 Hz to 1 MHz, all ranges. **Ranges:** Ten ranges from 0.01 to 300 V rms full scale. **Decibels:** Total-range −52 to +58, meter scale −12 to +2 dB (0 dB = 1 mW in 600 ohms), ten switch selected ranges from −40 dB to +50 dB in 10 dB steps. **Input impedance:** 10 megohms shunted by 22 pF on ranges 10 to 300 V, scale. 10 megohms shunted by 22 pF on ranges .01 to 3 V. **Accuracy:** Within 5% of full scale. **Power requirements:** 120/250 VAC, 60/50 Hz, 10 W. **Dimensions:** 7⅜" H x 4¹¹⁄₁₆" W x 4⅛" D.

Heathkit IM-28 Service Bench VTVM

A deluxe version of the IM-18 in a big stay-put size.

Kit IM-28, Shpg. wt. 7 lbs. **46.95**

Assembled SM-21A, Shpg. wt. 7 lbs. **90.00**

IM-28 SPECIFICATIONS

DC VOLTMETER — **Ranges:** 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. **Input Resistance:** 11 megohm (1 megohm in probe) on all ranges: 1100 megohms with accessory probe. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** ±3% of full scale. **AC VOLTMETER — Ranges:** 0-1.5, 5, 15, 50, 150, 500, 1500 rms scales. **Frequency Response (5 V range):** ±1 dB 25 Hz to 1 MHz (800 ohm source, referred to 60 Hz). **Accuracy:** 5% of full scale. **Input Resistance & Capacitance:** 1 megohm shunted by 40 pF measured at input terminals (200 pF at probe tip). **OHMMETER — Ranges:** Scale with 10 ohm center X1, X10, X100, X1000, X10k, X100k, X1 meg. Measures .1 ohm to 1000 megohms with internal battery. **Meter:** 6" 200 μA movement, polystyrene case. **Battery:** 1½ V, "C" cell (not supplied). **Power requirement:** 120/240 VAC, 60/50 Hz, 10 W. **Dimensions:** 5" H x 12¹¹⁄₁₆" W x 4¾" D.

$17.95 Kit

Heathkit 40 kV Probe Meter

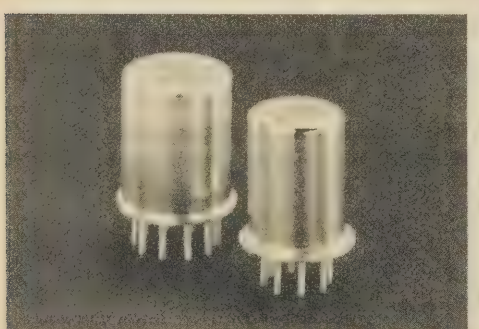


TV tube voltage measurements are fast and convenient with the new Heathkit IM-5210 Probe Meter. It is light weight, portable and will measure DC voltages up to 40 kV with ±3% accuracy. You just attach the ground clip to the TV chassis, place the probe against the tube's high voltage connector and switch on the meter — it's as simple as that. The on-off switch on the handle protects the meter during hookup and when the probe is not in use. Assembles easily, in about an hour.

Kit IM-5210, Shpg. wt. 1 lb. **17.95**

IM-5210 SPECIFICATIONS

Voltage Range: 0-40 kVDC. **Accuracy:** ±3% of full scale. **Size:** 1½" H x 1⅞" W x 15" D.



Now—convert your tube-type Heathkit VTVM to instant-on solid-state design

Replaces the 6AL5 and 12AU7 tubes used in many Heathkit VTVMs, including IM-18 and IM-28. Two solid-state devices plug directly into the tube sockets. One is a high voltage amplifier containing 4 FETs; the other contains 2 special diodes with low forward drop. Provides instant-on service, eliminates pointer-drift corrections.

IMA-18-1, Shpg. wt. 1 lb. **16.95**

Get the most from your meter

Handbook of Practical Electronic Tests & Measurements. EDP-137 ..... **17.95**

101 Ways to Use Your VOM/VTVM, covers equipment checks ac & dc voltage, dc current, ohmmeter, signal tracing, alignment & color TV. **EDP-150** **4.50**

Understanding & Using the VOM & DVM. EDP-140 ..... **4.95**

Electronic Measurements Simplified, covers TV servicing, 2-way & ham radio, CB, etc. **EDP-141** **4.95**

See page 48 for book-ordering information



Heathkit performance specifications are guaranteed.

of precision and accuracy



HEATH charg-a-kit REVOLVING CHARGE

Heathkit IM-2202 Portable Digital Multimeter

The lowest-priced professional-grade digital multimeter we've ever offered! 26 ranges — measures AC and DC volts, DC current and resistance. Has 100% overrange capability, separate voltage and current inputs for circuit protection. All functions are protected against accidentally applied voltages up to 250 volts. Voltage ranges have high input impedance (10 megohm typical) for minimum circuit loading. Current ranges feature low voltage drop (100 mV typical) for high accuracy. Resistance ranges limit maximum test current to 1 mA. 2-volt full scale measurement on 1k, 10k and 1 meg ranges allow forward biased junction testing of semiconductor devices.

If a lab standard is used for calibration, DC accuracy is 0.2%. AC accuracy is 0.5% to 10 kHz. Internal standards (supplied) allow field calibration to 0.5% for DC and 1% for AC. Has 3½-digit display with leading zero suppression, automatic polarity indication and decimal placement. A flashing "1" display indicates overrange. Four push-button function switches and a continuous rotation range switch select range. Ultra-compact, with a single MOS/LSI integrated circuit containing all digital and logic functions. Assembly of the IM-2202 is aided by circuit board construction and plug-in components, but previous kitbuilding experience is recommended. Operates on four rechargeable nickel-cadmium batteries (included), 110 or 220 VAC, or temporarily on four "C" cells.

Kit IM-2202, Shpg. wt. 7 lbs. **179.95**

IM-2202 SPECIFICATIONS

NOTE: Accuracy specifications of the IM-2202 depend on use of built-in references or laboratory standard references for calibration.
DC VOLTAGE — Range/Input Impedance: 100.0 mV/50 MΩ, 1.000 V/500 MΩ, 10.00 V/10 MΩ, 100.0 V/10 MΩ, 1000 V/10 MΩ. **Overload Capability:** 300 V on 100 mV & 1 V ranges; 1000 V on 10 V, 100 V & 1000 V ranges. **Accuracy:** Built-in references, ±0.5%, ±1 digit. Laboratory standards, ±0.2%, ±1 digit. **AC VOLTAGE — Range/Input Impedance:** 100.0 mV/10 MΩ-120 pF, 1.000 V/10 MΩ-120 pF, 10.00 V/10 MΩ-60 pF, 100.0 V/10 MΩ-60 pF, 750 V/10 MΩ-60 pF. **Overload Capability:** 250 V on 100 mV & 1 V ranges; 750 V on 10 V, 100 V & 750 V ranges. **Accuracy:** Built-in references...±1.0%, ±3 digits; 40 Hz to 1 kHz (except 40 Hz to 10 kHz on 100 mV and ranges). Laboratory standards...±0.5%, ±3 digits; 40 Hz to 2 kHz on 750 range). **DC CURRENT — Range/Voltage Drop:** 100.0 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mV, 100.0 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±.5%, ±1 digit (except ±1%, ±1 digit on 1000 mA range). Laboratory standards...±.2%, ±1 digit (except ±.5%, ±1 digit on 1000 mA range). **Overload Protection:** Input coupled through 3.0 Ampere fuse to shunt diodes for overloads above approximate 1.2 Volts. **AC CURRENT — Range/Voltage Drop:** 100 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mV, 100.0 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±1.0% ±3 digits (except ±1.5%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. Laboratory references...±.5%, ±3 digits (except ±1.0%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. **Overload Protection:** Input coupled through 3.0 Ampere fuse to shunt diodes for overloads above approximate 1.2 Volts. **RESISTANCE — Range/Test Current:** 100.0 Ω/1.0 mA, 1.000 kΩ/1.0 mA, 10.00 kΩ/0.1 mA, 100.0 kΩ/1.0 μA, 1000 kΩ/10. μA. **Accuracy:** Built-in references...±.5%, ±1 digit. Laboratory standards...±2%, ±1 digit. **Open-circuit Voltage:** 12 VDC. **Overload Protection:** Positive input overvoltage protection by blocking diode to 400 volts; negative input over-voltage through 0.03 A fuse and shunt diode. **GENERAL — Overrange Capability:** 100% on all ranges except 1000 VDC & 750 VAC. **Display:** 1999 maximum; seven segment planar; 0.55″ high digits. **Display Rate:** Approximately 5 per second, non-blinking. **Normal Mode Rejection:** 35 dB (line operation); extended on battery operation. **Common Mode Rejection:** 80 dB (line operation); extended on battery operation. **Power Line Isolation:** May be operated 1500 V above power line ground (during line operation). **Operating Temperature Range:** 10°C to 40°C. **Power Requirement:** 110 to 130 VAC, or 220 to 260 VAC (internal selectable)); 60/50 Hz; 5 watts typical during charge. **Size (overall including handle folded to rear):** 3″ H x 8¼″ W x 8″ D.



Our lowest cost bench DVM

The low-cost DMM that hams, hobbyists and service techs have been waiting for. Its full-function capability even includes AC voltage measurements up to 700 volts. Has four overlapping AC & DC voltage & current ranges and five resistance ranges. Accuracy is 1% on DC volts, 1½% on AC volts and AC/DC current, and 2% on resistance.

A solid-state design uses IC circuitry for a clear non-blinking 2½-digit display with automatic decimal positioning. The easy assembly makes it a great project for student electronics labs. And the exclusive Heath built-in calibration standards are all that's needed for initial and periodic adjustments.

Features overload protection on all ranges, 120 or 240 VAC operation, isolated floating ground, attractive heavy-duty case to withstand rugged use, universal banana jack inputs.

Kit IM-1212, Shpg. wt. 7 lbs. **79.95**

Assembled SM-1212, wired version of the IM-1212, Shpg. wt. 7 lbs. **125.00**

IM-1212 SPECIFICATIONS

Ranges: (full scale): DC volts: 2, 20, 200, 1,000V. DC current: 2, 20, 200, 2,000 mA. AC volts: 2, 20, 200, 700V rms (25 Hz to 10 kHz). AC current: 2, 20, 200, 2,000 mA rms (25 Hz to 10 kHz). Ohms: 200, 2k, 20k, 200k, 2,000k ohms. **Maximum Input Without Damage:** 3 A into AC or DC mA, and ohms (fuse protected). 700 VAC rms into volts (except 2V range — 140 VAC rms). 1000 VDC into volts (except 2V range — 200 VDC). **Accuracy:** (Full scale ±1 digit): 1% DCV (1000 V max.), 1½% ACV (700V max.), AC & DC current, 2% ohms. **Input Impedance:** 1 megohm on all voltage ranges. 2V drop maximum on current ranges. **Power Requirement:** 120/240 VAC, 60/50 Hz, 8 watts. **Dimensions:** 3¼″ H x 9½″ W x 8¾″ D.

Our finest 3½-digit DVM

26 ranges — AC, DC volts, DC current, and resistance. Has automatic polarity indication and decimal positioning, overrange indication, complete overload protection on all ranges. One of the finest DVM's you can buy!

Kit IM-102, Shpg. wt. 9 lbs. **249.95**

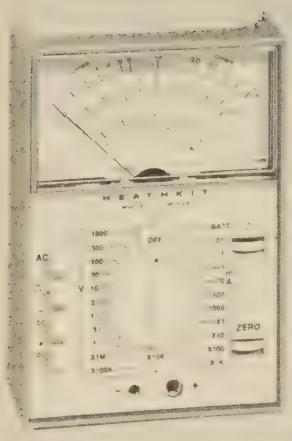


IM-102 SPECIFICATIONS

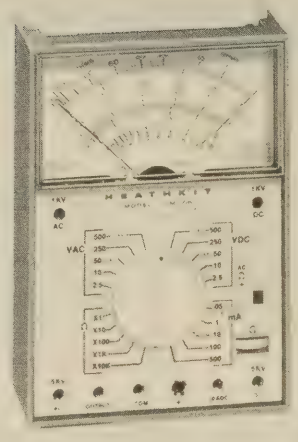
DC VOLTMETER — 5 Ranges: 200 mV, 2V, 20V, 200V, 1000V. **Input Impedance:** Approx. 100 megohm on 200 mV, approx. 1000 megohm on 2 V, 10 megohm on all other ranges. **Accuracy:** ±0.2% ±1 digit with furnished DC calibrator, ±0.1% ±1 digit with lab calibration. **Normal Mode Rejection:** 35 dB minimum @ 60 Hz. **Common Mode Rejection:** 80 dB minimum with 1k unbalance @ 60 Hz. **OHMMETER — 6 Ranges:** 200 ohms with 1 mA test current, 2k with 100μA, 20k with 10μA, 200k with 10μA, 2M with 1μA, 20M with 100nA. **Accuracy:** With DC calibrator, ±0.5% ±1 digit on 200, 2k, 20k, 200k ranges; ±1.5% ±1 digit on 2M and 20M ranges. With lab calibration, ±0.5% ±1 digit on 200 ohm range; ±0.25% ±1 digit on 2k, 20k, 200k; ±1% ±1 digit on 2M and 20M. **AC VOLTMETER** (Average responding, rms calibrated) — **5 Ranges:** 20 mV, 2 V, 20 V, 200 V, 1000 V. **Input Impedance:** 1 megohm @ 150 pF. **Accuracy:** With DC calibrator, ±0.75% ±1 digit for 40Hz-10kHz, ±1% ±1 digit for 10kHz-20kHz on 200 mV and 2V ranges: ±0.75% ±1 digit for 40Hz-5kHz, ±1.5% ±1 digit for 5kHz-10kHz on 20V and 200V ranges: ±1.5% ±1 digit for 40Hz-7.5kHz on 1000V range. **DC AMMETER — 5 Ranges:** 200μA, 2mA, 20mA, 200mA, 2A. **Voltage Drop:** 0.2V (nominal). **Accuracy:** With DC calibrator, ±0.5% ±1 digit for 2A, ±3% ±1 digit on all other ranges. With lab calibration, ±0.25% ±1 digit for 2mA and 20mA; ±0.3% ±1 digit for 200mA; ±0.5% ±1 digit for 2A. **AC AMMETER** (40Hz-10kHz) — **5 Ranges:** 200μA, 2mA, 20mA, 200mA, 2A. **Voltage Drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±1.5% ±1 digit on 2A, ±1% on all other ranges. With lab calibration, ±0.75% ±1 digit on 200μA, ±0.7% ±1 digit on 2mA and 20mA; ±0.8% ±1 digit on 200mA; ±1 digit on 2A. **GENERAL — Display:** Maximum count, 1999. **Power Requirement:** 120 or 240 VAC, 60/50 Hz, 8 W nominal. **Operating Temperature:** 10°C-40°C. **Size:** 3″ H x 7″ W x 7.9″ D.

Precision VOM's, Line Voltage Monitor

Heath Test Instruments have won the confidence of thousands the world over. No matter what your electronic testing need, there's a Heath Instrument that will do it for you, and do it better.



1 **$94.95**



2 **$64.95**



3 **$19.95**



4 **$29.95**

1 Heathkit FET taut-band VOM — ten megohm input in a portable meter

A portable lab-grade FET VOM combining accuracy, versatility, convenience and ruggedness — in an easy-to-build dollar-saving kit! Our IM-104 has low-drift 1% precision metal film and wirewound resistors for exceptional stability. Nine DCV & ACV ranges measure from .01V to 1000V. Six current ranges cover 0.001 mA to 1000mA, DC & AC. Seven resistance ranges from 1 ohm to 100 megohms, conventional or low voltage modes. Decibel ranges from −40 dB to +62 dB. DC null scale with better than 1 mV resolution. The 4½" ruggedized, taut-band meter is diode protected, built to take plenty of abuse. Built-in circuitry shows battery condition at the flip of the range selector. Three evenings put this great portable VOM on your bench.

Kit IM-104, Shpg. wt. 4 lbs. **94.95**

Assembled SM-666, has additional 1μA current range, less 100 & 1000 mA ranges, Shpg. wt. 4 lbs. **149.00**

IM-104 SPECIFICATIONS

DC VOLTMETER — 9 ranges: 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. **Input resistance:** 10 megohm. **Accuracy:** ±2% of full scale (meter in horizontal position). **AC rejection:** Accuracy not affected by impressed 60 Hz sine wave with rms value 2x greater than full-scale value. **Null indicator:** On 0.1, 1, 10, 100, 1000V, meter zero level may be adjusted to center of null referenced scale. Null variations of approx. 1% of full-scale can be resolved. **AC VOLTMETER — 9 ranges:** 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. **Range factor:** 1 to 3.162 (10 dB) per step. **Input resistance:** 10 megohm. **Input capacity:** 100 pF typical. **Accuracy:** ±3% of full scale (meter in horizontal position; 60 Hz sine wave). **Response:** Average value of ½ sine wave. Scale calibrated to indicate rms. **Frequency response:** 20 Hz to 20 kHz ±3%, 20 Hz to 50 kHz ±5% on 0.1 to 30 V, 20 Hz to 10 kHz ±3%, 20 Hz to 20 kHz ±5% on 100 and 300 V. 20 Hz to 1.0 kHz ±3%, 20 Hz to 2.5 kHz ±5% on 1000 V. **DC MILLIAMMETER — 6 ranges:** 0-0.01, .1, 1, 10, 100, 1000V mA. **Voltage drop (approx. full scale):** 0.100 V on 0.01 to 10, 0.150V on 100, 0.350 V on 1000. **Insertion resistance:** Voltage drop divided by full-scale current. **Accuracy:** ±2% on 0.01 to 100, ±3% on 1000. (Meter in horizontal position.) **AC MILLIAMMETER — 6 ranges:** 0-0.01, 0.1, 1, 10, 100, 1000 mA. **Voltage drop (approx. of full scale):** 0.100 V on 0.01 to 1, 0.150 V on 100, 0.350 on 1000 V. **Insertion resistance:** Voltage drop divided by full scale. **Accuracy:** ±3° on 0.01 to 100, ±4% on 1000. (Meter in horizontal position; 60 Hz sine waves.) **Response:** Average value of ½ of sine wave (DC current must be negligible). Scale calibrated to include rms. **Frequency response:** 20 Hz to 5 kHz ±3% on 0.01, 20 Hz to 20 kHz ±3% on 0.1, 20 Hz to 50 kHz ±3% on 1 to 1000. **OHMMETER — 7 ranges:** Rx1 (10 ohm center scale), Rx10, Rx100, Rx1k, Rx10k, Rx100k, Rx1M. **Accuracy:** ±3% on x10 to 1M. **Test voltage (nominal):** 1.55V on +DC/ohm and −DC/ohm, 0.085 V on ohm. **DB RANGE — 9 ranges (0 dB = mV into 600 ohm):** −40 to −18, −30 to −8, −20 to +2, −10 to +12, 0 +22, +10 to +32, +20 to +42, +30 to +52, +40 to +62. **Accuracy:** ±3 dB @ −20 dB to ±0.3 dB @ +28. **Meter protection:** will sustain momentary overload of 220 VAC or DC on any range, diode and 2A fuse protected on ohms x1 and 0.01 to 100 mA, FET protected on 0.1 to 100 V and ohms x10k to ohms x1M. Internal circuitry protected against improper battery installation. Diode protected meter. **Amplified circuit:** Dual FET source followers driving operational amp. **Operating temperature:** 0 to 50°C. **Storage temperature (less batteries):** −40 to +80°C. **Batteries (not supplied):** 1 1.5 V D-cell (NEDA #13). 4 1.5 V AA-cell (NEDA #15). **Dimensions:** 6.95" H x 4.95" W x 2.25" D.

2 Heathkit taut-band general-purpose VOM

It's an easy, enjoyable one-evening kit — build-up two modular circuit boards and you have it. This highly versatile IM-105 gives you a low-friction, taut-band meter with diode & fuse protected movement. Fuse in-line with the input connector is removable from front for extra convenience. Other professional features include calibrating controls, DC polarity switch, self-storing handle.

Kit IM-105, Shpg. wt. 3 lbs. **64.95**

Assembled SM-660, (less 5 KV ranges), Shpg. wt. 4 lbs. **72.00**

IM-105 SPECIFICATIONS

DC VOLTAGE RANGES: −0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. **Accuracy:** ±3% of full scale. **Input resistance:** 20,000 ohms/V full scale. **AC VOLTAGE RANGES:** −2.5, 10, 50, 250, 500 V, 1 kV & 5 kV full scale. **Accuracy:** ±4% of full scale. **Input resistance:** 5000 ohms/V. **Input capacity:** Less than 20 pF. **Frequency response:** 2.5, 10, and 50 V ranges: ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz. **DC CURRENT RANGES:** −0.05, 1.0, 10, 100, 500 mA & 10 A full scale. **Accuracy:** ±3% of full scale. **Voltage drop:** Approximately 0.25 V at full scale. **RESISTANCE RANGES:** −x1 (20 center scale), x10, x100, x1k, x10k. **Accuracy:** ±3 degrees of arc. **Source voltage:** x1 through x1k ranges: 1.5 V x 10k range: 15 V. **DECIBEL RANGES:** (0 dB = 1 mW in 600 ohms): −10 to +56 dB. **GENERAL — Operating temperature range:** 0-55° C. **Batteries (not supplied):** One 1.5V "D" cell (NEDA #13). One 15V (NEDA #208). **Dimensions:** 7" H x 5" W x 2¼" D.

3 Heathkit Line Voltage Monitor

Improper line voltage can cause poor operation of test equipment and circuits. With the solid-state IM-103, you always know what your line voltage is. When calibrated from a source of known accuracy, the IM-103 has an accuracy of ±2%.

Kit IM-103, Shpg. wt. 3 lbs. **19.95**

IM-103 SPECIFICATIONS

Voltage range: 90 VAC (rms) — 140 VAC (rms). **Voltage accuracy (sine wave):** ±2% when calibrated with a known line voltage. **Power requirement:** 90-140 VAC, 50-60 Hz, 4.2 W. **Dimensions:** 5⅛" H x 6¼" W x 3" D.

4 Heathkit IM-17 — everyman's VOM

The perfect buy for homeowners, hams, servicemen, hobbyists, modelers — everyone. All solid-state with FET input for less circuit loading, better accuracy than ordinary VOMs. Portable battery operation, zero and ohms adjust, accessory probe jack. DC polarity switch, three test leads, easy 3-5 hour assembly. Less batteries.

Kit IM-17, Shpg. wt. 4 lbs. **29.95**

IM-17 SPECIFICATIONS

DC VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scales. **Input resistance:** 11 meg. on all ranges. **Accuracy:** ±3% of full scale. **AC VOLTMETER — Four ranges:** 0-1, 10, 100, 1000V full scale. **Input resistance:** 1 meg. on all ranges. **Accuracy:** ±5% of full scale. **Frequency response:** ±1 dB, 10 Hz to 1 MHz. **OHMMETER — Four ranges:** RX1, RX100, RX10k, RX1M. **Input resistance:** 1 meg. on all ranges. **Dimensions:** 5⅜" H x 9⅜" W x 9" D.

Heathkit performance specifications are guaranteed.

Get more for your counter dollar at Heath



12 Volt Operation
Rear panel connector permits use of any 12-volt DC power source. A mating connector is supplied with the kit.

Overrange Indicator
Indicates when the number to be displayed is larger than the display can handle.

POWER/TIME BASE Switch
Turns the IM-4100 on, selects between kHz and MHz for frequency measurements, and selects second or millisecond time bases for period measurements.

Gate Lamp
Flashes on when the display is updated. Also functions as a logic probe (see right) for trouble-shooting during calibration or servicing.

Reset Switch
Pushbutton switch resets the display to zero in any mode of operation.

Input Attenuator
Three-position switch provides ÷1, ÷10 or ÷100 attenuation of the input signal.

Three Operating Modes
Modes for frequency measurement to 30 MHz, period measurements to 99.999 seconds, or totalize for events counting to 99,999 are easily switch-selected.

Our most versatile counter — frequency to 30 MHz, period to 99.999 seconds, events to 99,999.

Sensational counter value! It's a full five-digit frequency counter with period and totalize modes. As a frequency counter, it's guaranteed to 30 MHz with 1 Hz resolution. In the period mode, it measures intervals up to 99.999 seconds. Using the millisecond time base, it resolves to 1 msec! The totalize mode will add up (totalize) event pulses up to a count of 99,999. Pushing the RESET button starts the count at zero. An inhibit signal stops the totalize mode at any time, without loss of the displayed count. Front panel attenuator switch allows the amplitude of input signals to be divided by 1, 10 or 100. Front panel display includes overrange indicator and a gate lamp. A rear panel switch selects internal or external time base. The rear panel connector can be used as an input for the external time base signal, or as an output to check the internal 10 MHz time base or provide a convenient frequency standard of 1 MHz for bench use. Operates from any 12 VDC source. And the IM-4100 is easy to build thanks to the open circuit board layout. A simple gate light modification gives you a handy logic probe for trouble-shooting should problems arise.

Kit IM-4100, Shpg. wt. 7 lbs. **129.95**
Assembled SM-4100, Shpg. wt. 7 lbs. **190.00**

IM-4100 SPECIFICATIONS

FUNCTIONS — Frequency: 5 Hz to 30 MHz. **Period:** 1 μsec resolution to 99.999 sec. **Totalize:** 1-99,999 events. **INPUT — Frequency Range:** 5 Hz to 30 MHz minimum. **Sensitivity:** 15 mV rms (50 mV, 5 Hz to 50 Hz). **Period Pulse Width:** 25 nsec minimum. **Low Frequency Signal Risetime:** 1 msec for signals less than 10 Hz. **Input Impedance:** 1 megohm shunted by less than 35 pF. **Protection:** 240 volts rms at 60 Hz. **Attenuator:** X1, X10, X100 fixed compensation. **TIME BASE — Frequency:** 10 MHz. **Setability:** ±1 ppm. **Temperature stability:** ±10 ppm, maximum 0° to 40° C ambient. **OSCILLATOR CONNECTION — External Input Frequency:** DC to 20 MHz. **External Input Sensitivity:** TTL or 2.5 V rms from 50-ohm source. **Internal Output:** TTL signal at 1 MHz. **GENERAL — Gate Interval:** kHz-1 sec, MHz-1 msec. **Manual Gate:** DC control in events mode using external OSC input connector. **Display Time:** 200 msec plus gate interval. **Power Requirements:** 105-130 or 210-260 VAC (switch-selected). 60/50 Hz, (at 25 watts); or 9-14 VDC at 1.25 amperes. **Dimensions:** 2¾" H x 7¼" W x 10½" D (less handle).



$349.95

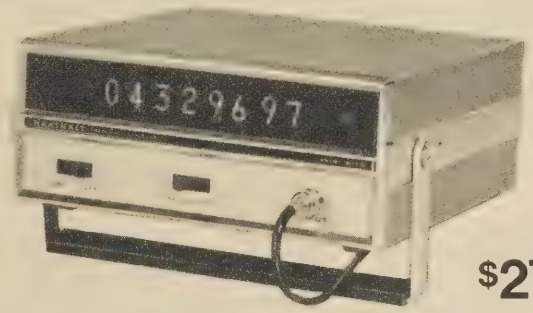
180 MHz Counter with phase-locked multiplier

Features 1 Hz to 180 MHz range, pushbutton selection of x1, 10, 100 or 1000 multiplier for resolution down to 0.001 Hz. Pushbutton selection of 1 msec, 100 msec and 1 second gate times for variable resolution readings. Input for external clock. Has 8-digit cold-cathode display plus range, overrange, gate and loop-unlocked indicators, separate AC and DC coupled inputs, 120/240 VAC primary.

Kit IB-1103, Shpg. wt. 12 lbs. **349.95**

IB-1103 SPECIFICATIONS

FREQUENCY MEASUREMENTS — Range: 1 Hz to 180 MHz. **Accuracy:** ±count ±time base stability. **Readout:** MHz, kHz, or Hz with correctly positioned decimal. **Impedance:** 1 megohm in parallel with 35 pF. **Overload:** Diode-protected input circuit. **TIME BASE — Crystal frequency:** 4 MHz TCXO (Temperature Compensated Crystal Oscillator). **Stability:** Aging rate ±1 ppm/yr. **FREQUENCY MULTIPLIER — Ranges versus input frequency:** x1: No multiplier (direct counting). **x10:** 100 Hz to 300 kHz. x100: 10 Hz to 100 kHz. x1000: 10 Hz to 10 kHz. **EXTERNAL TIME BASE INPUT — Frequency:** 1 MHz with stability greater than 10^{-7}. **Input impedance:** 1000 ohms. **Maximum input:** 3 V rms. **Power requirements:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅝" H x 8⅝" W x 9¼" D.



$279.95

8-digit, 120 MHz Counter

120 MHz range...excellent sensitivity...high stability...low cost: that's the Heath IB-1102! 50 mV sensitivity over the entire range. FET input circuitry offers high impedance for minimum circuit loading...automatic triggering level. The high stability 4 MHz temperature compensated crystal oscillator provides unusual accuracy for a counter in this price class...for even more critical measurements you can use an external time base. Eight-digit, cold-cathode readout plus lighted indicators for MHz, kHz, overrange and gate condition mean resolution down to 1 Hz for frequencies up to 99.999 MHz...10 Hz resolution for frequencies over 100 MHz.

Kit IB-1102, Shpg. wt. 12 lbs. **279.95**

IB-1102 SPECIFICATIONS

FREQUENCY MEASUREMENTS — Range: 1 Hz to 120 MHz. **Gate time:** 1 msec. or 1 sec. **Accuracy:** ±1 count ± time base stability. **Readout:** kHz or MHz with fixed decimal point. **SIGNAL INPUT — Sensitivity:** 50 mV rms. **Impedance:** 1 megohm in parallel with 35 pF. **Trigger level:** Automatic. **Overload:** Diode protected input circuit. **TIME BASE — Crystal Frequency:** 4 MHz, TCXO (Temperature Compensated Crystal Oscillator). **Stability:** Aging rate: ±1 ppm/yr. **Short term:** Better than 0.5 ppm in 1 sec. **EXTERNAL TIME BASE INPUT:** Frequency: 1 MHz with stability $>10^{-7}$. **Input impedance:** 1000Ω. **Maximum input:** 3V rms. **GENERAL — Display:** 8 digits plus overrange, gate, kHz, and MHz lamps. **Operating temperature range:** Operating 10°C to 40°C. **Power requirements:** 120/220 VAC, 50/60 Hz, 30 W. **Connectors:** Two BNC's. Input on front panel; external clock on rear panel. **Cabinet dimensions:** 8⅝" W x 3⅝" H x 9¼" D.

Charge a kit — no money down on any kit — see page 50 for details.

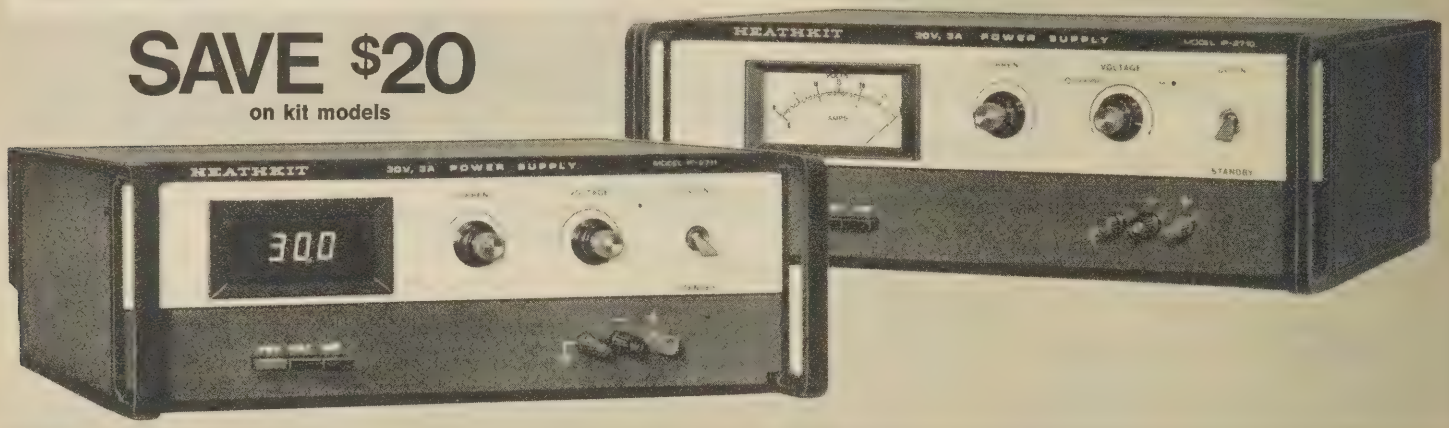
There's a reliable Heathkit Power Supply

Prices Slashed on 2700 Series supplies!

These ultra-reliable supplies provide a precise, accurate source of voltage and current for all your testing and design needs. They offer digital or analog readout, constant current or constant voltage operation, complete output protection. Choose the one that's right for your bench and SAVE!

SAVE $35 to $40
on assembled models

SAVE $20
on kit models



2700 Series Digital and Analog Power Supplies

Ideal for powering breadboard circuits, electrical component testing, or as a power source for bench use. All feature remote programming and voltage sensing; simplified front panel operation. Digital readout types have two decade auto-ranging for high resolution on low voltage and current settings. Choose from four DC models: 0-7.5V @ 10 A; 0-15 V @ 5 A; 0-30 V @ 3 A; 0-60 V @ 1.5 A.

Kit IP-2700, 60V analog, Shpg. wt. 35 lbs. ....**Was 169.95 Now 149.95**
Assembled SP-2700, 60V analog, Shpg. wt. 35 lbs. ..... **Was 255.00 Now 220.00**

Kit IP-2701, 60V digital, Shpg. wt. 37 lbs. ....**Was 219.95 Now 199.95**
Assembled SP-2701, 60V digital, Shpg. wt. 37 lbs. ..... **Was 340.00 Now 300.00**

Kit IP-2710, 30V analog, Shpg. wt. 34 lbs. ....**Was 169.95 Now 149.95**
Assembled SP-2710, 30V analog, Shpg. wt. 34 lbs. ..... **Was 255.00 Now 220.00**

Kit IP-2711, 30V digital, Shpg. wt. 36 lbs. ....**Was 219.95 Now 199.95**
Assembled SP-2711, 30V digital, Shpg. wt. 36 lbs. ..... **Was 340.00 Now 300.00**

Kit IP-2720, 15V analog, Shpg. wt. 34 lbs. ....**Was 169.95 Now 149.95**
Assembled SP-2720, 15V analog, Shpg. wt. 32 lbs. ..... **Was 255.00 Now 220.00**

Kit IP-2721, 15V digital, Shpg. wt. 36 lbs. ....**Was 219.95 Now 199.95**
Assembled SP-2721, 15V digital, Shpg. wt. 35 lbs. ..... **Was 340.00 Now 300.00**

Kit IP-2730, 7.5V analog, Shpg. wt. 36 lbs. ....**Was 169.95 Now 149.95**
Assembled SP-2730, 7.5V analog, Shpg. wt. 34 lbs. ..... **Was 255.00 Now 220.00**

Kit IP-2731, 7.5V digital, Shpg. wt. 38 lbs. ....**Was 219.95 Now 199.95**
Assembled SP-2731, 7.5V digital, Shpg. wt. 35 lbs. ..... **Was 340.00 Now 300.00**

IP/SP-2700 SERIES SPECIFICATIONS

(NOTE: Specs measured in accordance with NEMA standards (PYI-1972) after 30-minute warmup period.)

Max. Rated Output: Models IP/SP-2700 & 2701; 60V, 1.5A; models IP/SP-2710 & 2711: 30V, 3A; models IP/S-2720 & 2721: 15V, 5A; models IP-2730 & 2731: 7.5V, 10A. **Load Regulation:** Voltage: ±0.05% +1 mV, Current: ±0.10% +3.5 mA. **Line Regulation:** Voltage: ±0.05% +1 mV. Current: ±0.10% +1 mA. **Ripple & Noise:** Voltage: 1 mV RMS; 0.03% of rated output, peak-to-peak. **Voltage/Current Readout (Switchable):** Analog: 3½", 100°, meter. Digital: 3½-digit (1999), two-decade, auto-ranging, digital meter. **Readout Accuracy:** Voltage: Analog ±3% of rated output; Digital ±0.5% of reading ±1 count using lab standards, ±1.0% of reading ±1 count using built-in calibrator. Current: Analog — ±3% of rated output; Digital — ±1.0% of reading ±4 count using lab standards, ±1.5% of reading ±4 count using built-in calibrator. **Readout Response Time: (Digital):** 2 seconds to within 5 counts. **Stability at Output Terminals:** Voltage: ±(0.01% + 1 mV)/hr. Current: ±(0.05% + 1 mA)/hr. **Stability as Displayed (Digital):** Voltage: ±(0.01% + 1 mV + ½ count)/hr. Current: ±(0.01% + 1 mA + ½ count)/hr. **Operating Modes:** Constant voltage, constant current, auto-series, auto parallel. **Programming Mode:** Voltage: A—zero to rated output with 0 to 5.0 VDC applied; B—zero to rated output with 0 to 5000Ω external resistor. Current: Zero to rated output with applied voltage of 1.0 volt/amp (0.1 volt/amp for IP-2731). Programming transient response: 0.1 ms for low current to high current changes: 1.0 ms for high to low. Load resistance less than 10 x (E Rated/IRated). **Power Requirements:** 120/240 ± 10/20 VAC; 60/50 Hz, 2.0/1.0 Amps max. **Overall Dimensions:** 5.5" H x 15" W x 13.5" D.

IP-5220 Variable Isolated AC Power Supply



$109.95 • ***Provides Variable 0-140 VAC Output***

Offers safe, isolated AC power for service work, and testing. Features simultaneous metering of voltage and current output with 1A and 3A ammeter ranges for easy low-current readings; front panel isolated output. Starts from zero voltage — ideal for locating circuit faults due to high or low line voltage; testing new circuits. Continuous, smooth power is available to 360 volt-amperes, enough even for a color TV. Fused output protects the IP-5220 and the circuit under test.

Kit IP-5220, Shpg. wt. 27 lbs. **109.95**

IP-5220 SPECIFICATIONS

Input Voltage: 120 V @ 60 Hz for specified output. **Output Voltage:** 0-140 V @ 60 Hz. **Voltmeter Range:** 0-150 VAC. **Ammeter Ranges:** 0-1 & 0-3 A, AC. **Output Current:** 3 A max. 10 A (direct line connection.) **Output Power:** 360 Volt-Amperes maximum. **Dimensions:** 5.5" H x 15" W x 10.5" D.



Learn more about power supplies

Regulated Power Supplies — covers static & dynamic characteristics, regulation techniques, use of integrated circuits and more.
EDP-152 .....5.50

See page 48 for book-ordering information.



FOR FASTEST SERVICE — USE THE HEATHKIT HOTLINE! — (616) 982-3411 DAY OR NIGHT.

Charge a kit — no money down on any kit — see page 50 for details.

for every voltage range, every price range

IP-2718 Tri-Output Experimenter Power Supply

$79.95

Three floating outputs can be connected in any combination for a wide variety of output voltage and current capability

Combines 5 VDC fixed output with two 0-20 VDC variable outputs in a single, compact supply ideal for experimenters. The 0-20 variable outputs can be tracked — one will "follow" the other at any specified voltage difference — ideal for analog circuits requiring a + and — voltage. The 5-volt output is useful for digital circuits. All outputs are short-circuit proof, with current limiting. They can be operated independently, in series, or in parallel. Switchable front panel meter monitors all outputs.

Kit IP-2718, Shpg. wt. 12 lbs. **79.95**

Assembled SP-2718, Shpg. wt. 12 lbs. **140.00**

IP-2718 SPECIFICATIONS

Outputs: 5 volts DC ±5% at 1.5 A. Two 0-20 VDC at 0.5A, continuously adjustable. **Regulation: Load:** less than 0.1% variation from no load to full load on 20-volt supplies; less than 2% variation from no load to full load on 5-volt supply. **Line:** less than 0.2% variation for line voltage change of 10 volts on 20 volt supplies: less than 0.15% variation for line voltage change of 10 volts on 5-volt supply. **Power Requirement:** 100-135 VAC or 200-270 VAC, 60/50 Hz, 100 watts full load. **Dimensions:** 4½" H x 10¾" W x 9" D.

IP-2715 Power Supply/Battery Eliminator

$134.95

Provides variable 9-15 volt output capable of 12 amps continuous, 20 amps intermittent

Heavy-duty supply is the one you NEED for reliable Ham and CB radio servicing, any high-current 12-volt use. Features negligible ripple; excellent regulation from no load to full load. Has double heat sinks with 4 output transistors, extra-large transformer for steady smooth power.

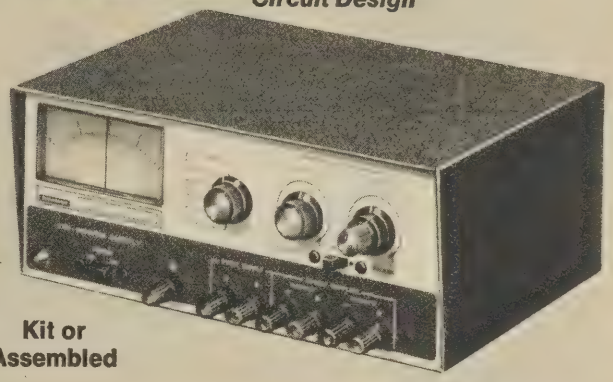
Kit IP-2715, Shpg. wt. 31 lbs. **134.95**

IP-2715 SPECIFICATIONS

Output Voltage: variable from 9-15 VDC. **Output Current:** 12 amps continuous, 20 amps intermittent (per derating curve in manual). **Ripple:** less than 1% at full load. **Regulation:** less than 2% variation from no load to full load. **Fuses:** 7A, 3 AG slow-blow primary; 20A, 3 AG output. **Power Requirements:** 110-130 VAC, 7A or 220-260 VAC, 3.5 A, 60/50 Hz. **Dimensions:** 5¼" H x 11" W x 11" D.

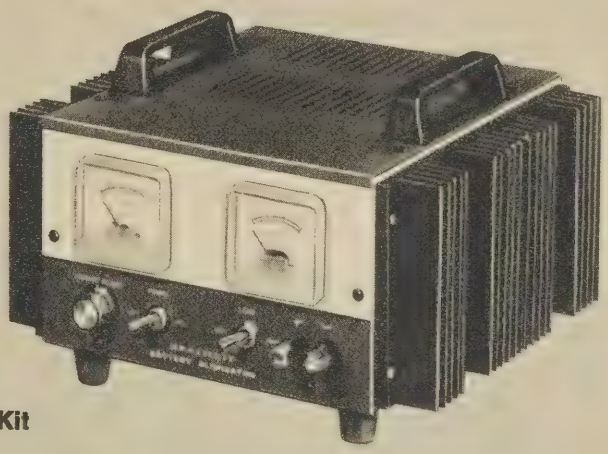
PLACE ORDERS FOR THESE PRODUCTS NOW FOR SHIPMENT BY APRIL 26, 1976.

New ***Offers 3 Output Voltages for Virtually Any Circuit Design***



Kit or Assembled

New ***Ideal for 2-way Radio Servicing, High-Current 12-Volt Applications***



Kit

IP-18 1-15 VDC regulated supply

Kit $24.95 **Assembled $50.00**



Ideal for service, design and testing of of low-voltage solid-state equipment — transistor radios, portable tape recorders, etc. Output continuously adjustable from 1-15 VDC with 50 mV load and line regulation...*and* adjustable current limiting from 10 mA to 500 mA. AC or DC programming capability. Three-terminal floating output.

Kit IP-18, Shpg. wt. 5 lbs. **24.95**

Assembled SP-18A, Shpg. wt. 5 lbs. **50.00**

IP-18 SPECIFICATIONS

Ripple and Noise: Less than 5 mV. **Current Output:** 500 mA maximum continuous load. **Current Limiting:** Adjustable from 10 mA to over 500 mA. **Transient Response:** 25 microseconds. **Output Impedance:** .5 ohm or less to 100 kHz. **Power Requirements:** 120/240 VAC, 60/50 Hz, 15 W at full load. **Dimensions:** 4⅜" H x 5½" W x 5¾" D. **Programming:** AC or DC, 5000 ohm input resistance.

IP-17 0-400 VDC general-purpose supply

$94.95 Kit

Assembled $160.00



A versatile supply for experimenters and service techs. Provides 0-400 VDC at 0-100 mA continuous, 125 mA intermittent. Has front panel voltage and current meters, built-in circuit protection, binding posts insulated from chassis to allow positive or negative high voltage and bias operation. Makes a great general purpose supply for the physics or chemistry lab.

Kit IP-17, Shpg. wt. 21 lbs. **94.95**

Assembled SP-17A, Shpg. wt. 21 lbs. **160.00**

IP-17 SPECIFICATIONS

Additional Outputs: 0 to —100 VDC at 1 mA variable bias voltage, 6.3 VAC at 4 amps., 12.6 VAC at 2 amps. (25 VA max. AC load), filament voltage. **Regulation:** Output variation less than 1% from no load to full load. **Ripple:** Less than 10 millivolts rms. **Output Impedance:** Less than 10 ohms, DC to 1 MHz. **Meters:** Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 mA. **Power Requirements:** 120/240 VAC, 60/50 Hz, 150 W max. **Dimensions:** 5⅛"H x 13¼" W x 11" D.

There's a Heathkit Generator for every lab,



Kit **$109.95**

Assembled **$150.00**

HEATH charg-a-kit REVOLVING CHARGE

This low-cost function generator delivers sine, square & triangle waveforms from 0.1 to 1 MHz

Combines wide frequency range, compact size and reliable Heath engineering in a low-cost generator. All controls are located on the front panel for convenient operation.

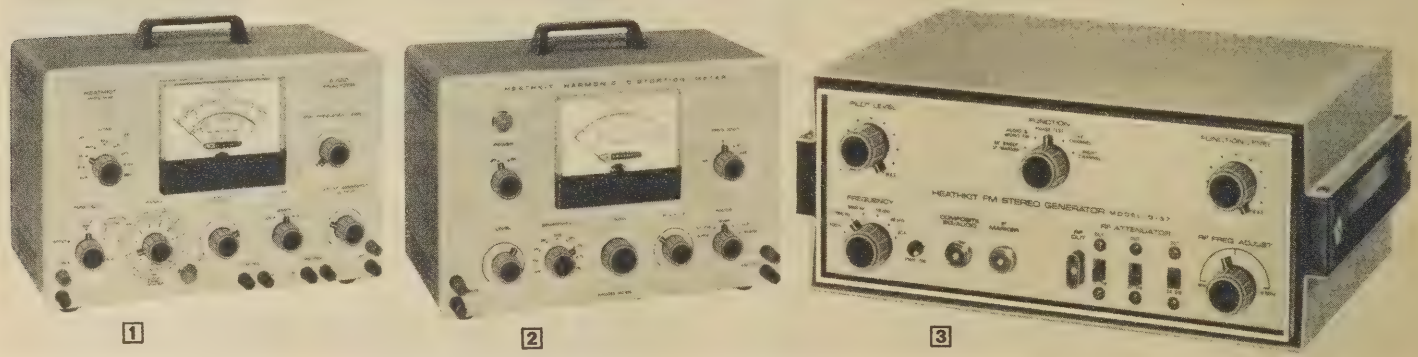
The Heathkit IG-1271 generates sine, square or triangle waveforms over a frequency range of 0.1 Hz to 1 MHz. The large tuning control allows fast and precise control of frequency over a 100:1 range. The six-position Frequency Multiplier is the only other control needed to set any frequency. The short-circuit-proof output amplifier supplies a 10 volt peak-to-peak signal into a 50-ohm load. A calibrated step attenuator adjusts from 0 to 50 dB (10V p-p to 30 mV p-p) in 10 dB steps. The variable attenuator control provides up to 20 dB additional attenuation for each step for total attenuation of 70 dB. Attenuator accuracy is ±1 dB. Frequency accuracy is ±3%. Nonlinearity of the triangle waveform is 5% maximum, with waveform symmetry within 10%. Square wave rise and fall times are 100 nsec maximum. 105-130 or 210-260 VAC operation. A triggered oscilloscope such as the IO-4530 (see page 64) is necessary for calibration.

Kit IG-1271, Shpg. wt. 7 lbs. **109.95**

Assembled SG-1271, wired version of the IG-1271 in same attractive blue & white styling (not shown), Shpg. wt. 7 lbs. **150.00**

IG-1271 SPECIFICATIONS

Frequency range: 0.1 Hz to 1 MHz. **Frequency accuracy:** ±3% of full scale on dial. **FUNCTIONS: Triangle waveform:** Nonlinearity, 5% maximum. Symmetry within 10% of 50% duty cycle. **Square waveform:** 100 nanosecond maximum rise or fall time. Symmetry within 10% of 50% duty cycle. **Sine waveform:** Harmonic distortion; 3% max., 5 Hz to 100 kHz. **Power requirements:** 105-130 volts or 210-260 volts rms, 60/50 Hz. 15 watts max. **Dimensions:** 3″ H x 7¼″ W x 8⅞″ D.



1 2 3

1 Heathkit Audio Intermodulation Analyzer

Ideal for critical IM distortion checks on stereo and 4-channel components

Three audio test instruments in one. An AC VTVM, wattmeter and IM analyzer are combined in one compact package. High and low signal sources are built in for IM tests. Noninductive load impedance of 4, 8, 16 and 600 ohms are switch-selected. 120/240 VAC, 60/50 Hz, 20 W. Measures 9½″ H x 13″ W x 7″ D.

Kit IM-48, Shpg. wt. 13 lbs. **94.95**

2 Heathkit Harmonic Distortion Meter

Excellent low-cost meter for service and repair shops, lab work, hobby bench

Operating convenience was a prime consideration in the design of the Heathkit IM-58. Harmonic distortion measurements can be made quickly and easily. Measures harmonic distortion as low as 1% full scale from 20-20,000 Hz. Measures noise down to —60 dBm. 120/240 VAC, 60/50 Hz, 30 W. 8½″ H x 13″ W x 7″ D. Requires audio generator such as the IG-72 (page 53) for alignment.

Kit IM-58, Shpg. wt. 13 lbs. **79.95**

3 Heathkit Stereo Generator

Provides audio or composite stereo signal for multiplex adapter adjustments...RF carrier modulated by these signals for tuner & receiver adjustments...phase test function for subcarrier transformer adjustment...a variable level crystal-controlled 19 kHz pilot signal for checking receiver lock-in ranges...plus built-in sweep and marker signals for RF & IF alignment. Other features include switch-selection of 400 Hz, 1 kHz, 5 kHz, 19 kHz, 38 kHz and one of two SCA frequencies...test leads included.

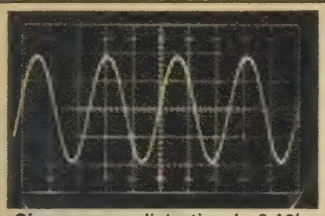
Kit IG-37, Shpg. wt. 12 lbs. **99.95**

IG-37 SPECIFICATIONS

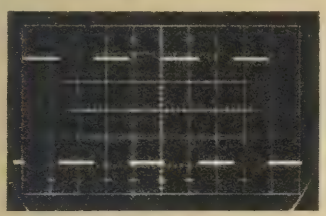
RF signal frequency: 100 MHz adjustable by approx. ±2 MHz. **Pilot modulating frequency:** 19 kHz ±2 Hz. **FM modulation:** Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase). Monophonic FM. **Deviation:** Adjustable to 75 kHz. **Sweep rate:** (used for RF and IF alignment) 60 Hz. **Sweep width:** (used for RF and IF alignment). Adjustable to 750 kHz. **RF attenuator range:** 60 dB in 20 dB steps. **Crystal-controlled markers:** 10.7, 90.95, 96.30, 96.30, 101.65 & 107 MHz. **Composite signal output:** Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). **Audio output:** 400, 1000 & 5000 Hz; 10 kHz (±2 Hz); 38 kHz & SCA (65 or 67 kHz). **Distortion:** (At 400, 1000 & 5000 Hz), Less than 5%. **Power requirements:** 120/240 VAC, 50/60 Hz, 35 W. **Dimensions:** 5½″ H x 13½″ W x 9″ D.

Charge a kit — no money down on any kit — see page 50 for details.

every test bench, every application



Sine wave...distortion is 0.1% from 10 Hz to 20 kHz. Range is 1 Hz to 100 kHz.



Square wave...rise time is less than 50 nanoseconds. Overall frequency range is 5 Hz to 100 kHz.



Kit $84.95 **Assembled** $130.00

The Heath IG-18 Sine & Square Wave Generator offers low cost, portability

Sine wave signals are available from 1 Hz to 100 kHz with distortion less than 0.1% from 10 Hz to 20 kHz. Eight output ranges from 0.003 to 10 V are provided when operating into a high impedance (10 k ohm min.) external load. Six ranges from 0.003 to 1 V are available when operating into the internal 600 ohm load or external load. A meter monitors the sine wave output, and is conveniently calibrated in both volts and dB. Square wave output is available from 5 Hz to 100 kHz with peak-to-peak output levels of 0.1, 1 and 10 V into a load of 2000 ohms or greater. Risetime is 50 nanoseconds. Frequency is selected using front panel switches for 0-100, 0-10, and x1, 10. 100 and 1000 multipliers. A separate vernier control is provided for the 0-1 range. Output is available simultaneously or independently. Dual primary transformer for 120 or 240 VAC operation.

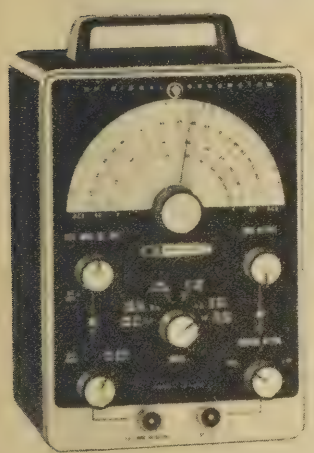
Kit IG-18, Shpg. wt. 12 lbs. **84.95**

Assembled SG-18A, wired version of the IG-18 in black & white styling, Shpg. wt. 10 lbs. **130.00**

IG-18 SPECIFICATIONS

SINE WAVE OUTPUT: Output voltage: 8 ranges, 0.003 to 10 V rms (full-scale) with 10 k ohm or higher external load. 6 ranges, 0.003 to 1 V (full scale) with 600 ohm internal or external load. **dB ranges:** −62 dB to +22 dB, −12 dB to +2 dB on meter and −50 to +20 dB on amplitude switch in 10 dB steps. +2 dB max. into 600 ohm load. (0 dB = 1 mW in 600 ohm). **Output variation:** +1 dB 10 Hz to 100 Hz. **Output indications:** Two voltage and one dB scale on meter. **Output impedance:** 10 V range: 0-1000 ohm; 3 V range: 800-1000 ohm; 1 V range and lower; 600 ohm. **Meter accuracy:** ±10% of full scale with proper load termination. **SQUARE WAVE OUTPUT: Output voltage (peak-to-peak):** .1; 1, 10 V into 2000 ohm load or higher. **Output impedance:** .1 V and 1 V ranges: 52 ohm; 10 range: up to 220 ohm. **Power requirements:** 105-125 or 210-250 VAC, 60/50 Hz, 6 watts.

These Heathkit Generators make servicing and testing a breeze. Put one on your bench!

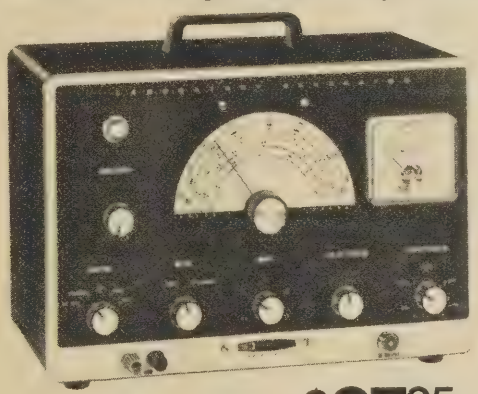


$44.95

Heathkit General Purpose RF Generator

The Heathkit IG-102 is an accurate, stable source of modulated or unmodulated RF signals. It covers 100 kHz to 100 MHz in 6 bands (100-200 MHz on harmonics) with 2% tuning accuracy. Internal signal modulation is 400 Hz and a 100 Hz audio output is provided for audio tests. 120/240 VAC, 60/50 Hz. 9½" H x 6½" W x 5" D.

Kit IG-102, Shpg. wt. 6 lbs. **44.95**



$97.95

Heathkit Precision RF Generator

The IG-42 provides 100 kHz to 30 MHz signals with ±3% adjustable frequency calibration for testing IF and RF sections of receivers, determining sensitivity, measuring gain of individual stages and image ratio. RF output voltage adjusts from 5 to 100,000 μV in five attenuated steps, with 10:1 variable attenuation. Output can be modulated from 0-50% with 5% accuracy. 120/240 VAC, 60/50 Hz. 8½" H x 13" W x 7" D.

Kit IG-42, Shpg. wt. 15 lbs. **97.95**



$64.95

Heathkit Low Distortion Audio Generator

Get nearly perfect sine-wave signals with the Heathkit IG-72. Distortion is less than 0.1% from 20 to 20,000 Hz. Switch selects frequencies from 10 Hz to 100 kHz, meter monitors output in volts and dB to within ±5% from 10 Hz to 100 kHz. 120/240 VAC, 60/50 Hz, 40 W. 6½" H x 9½" W x 5" D.

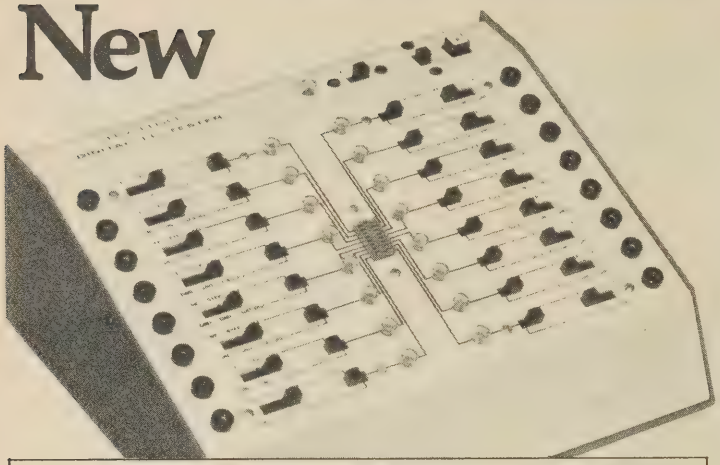
Kit IG-72, Shpg. wt. 8 lbs. **64.95**

Assembled SG-72A, wired version of the IG-72 in black & white styling, Shpg. wt. 8 lbs. **100.00**

Need probes and cables? See our complete selection on page 67.

Famous Heathkit Test Equipment Makes Any

New



Heathkit IT-7400 Digital IC Tester adds amazing versatility to any hobby or test bench

- ***"Zero Force" Insertion Socket prevents bent pins on IC's***
- ***No-bounce keyboard Mercury Switch allows stepping of more complex IC's***

A "must" for anyone working with the latest digital IC's. Lets you determine functions of unknown IC's, check operation of IC's against your own data sheets. Features a special high-quality "zero-force" insertion socket — the same as used in expensive production-line testers — that lets you make thousands of insertions and extractions without worrying about bent pins. An exclusive Heath "bounce-free," computer-type mercury stepping switch allows safe and easy "exercising" of multi-function IC's such as flip-flops. Has input-output jacks for each pin; easy-to-read neon indicators. Exceptionally easy to operate — 14- or 16-pin IC's can be installed in any position, switches and banana jacks allow each IC pin to be used as input or output. Ideal for use with the Heathkit ILP Digital Electronics Course (page 87).

Kit IT-7400, Shpg. wt. 7 lbs. **74.95**

IT-7400 SPECIFICATIONS

Pin Arrangement: accepts 14 or 16-pin dual-in-line IC's. **Indicator Lamps:** 17 neon lamps, one at each pin, plus ON indicator. **Stepping Circuit:** mercury switch with zero bounce stepping into any pin selected. **Pull-up Resistors:** externally connected, with patch terminals. **Patch Terminals:** one at each pin. **Selector Switches:** two at each terminal, one for +5V, step, or off; the other for gas discharge or ground. **Gas Discharge:** allows direct driving of neon indicator lamp for high voltage decoder driver. **Power Supply:** 5 VDC regulated, ±5%, 300 mA and 3.6 VDC, switch selected. **Power Requirement:** 100-135/200-270 VAC, 60/50 Hz, switch selected. **Dimensions:** 4⅝" H x 11⅜" W x 9¼" D.

Get MORE from your IT-7400 with these valuable reference books

Perfect companions to your IC tester. Clearly written, easy to understand.

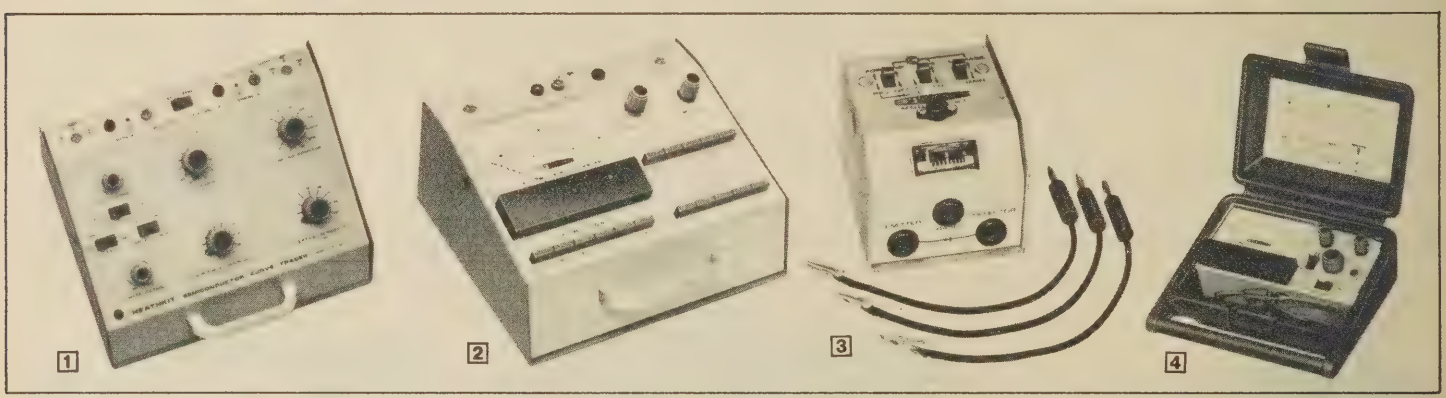
The TTL Data Book. Complete specifications, pin connections, test data and applications information on popular 7400 TTL digital IC's.

EDP-220 ..... **3.95**

Supplement to The TTL Data Book. Updates volume above with info on latest TTL circuits.

EDP-221 ..... **1.95**

See page 48 for book-ordering information



1 2 3 4

1 IT-1121 Curve Tracer

For oscilloscopes with horizontal sensitivity of 0.5 V/div. and vertical sensitivity of 1 V/div. Displays parameters for virtually any discrete semiconductor — bipolar transistors, diodes, SCRs, triacs, FETs, etc. Plug-in cables are supplied for easy scope hookup. Switch permits fast and accurate scope calibration. Displays gain (beta), leakage, breakdown voltage saturation, forward conduction voltage, output admittance, linearity, capacitance effects, temperature effects and others.

Kit IT-1121, Shpg. wt. 11 lbs. **94.95**

IT-1121 SPECIFICATIONS

Sweep Voltage Ranges: 0-40 volts at 1 ampere max. 0-200 volts at 200 mA max. **Sweep Voltage Sampling:** .1, .2, .5, 1, 2, 5, 10, 20 and 50 V/div. ±3%. **Sweep Current Sampling:** .5, 1, 2, 5, 10, 50, 100 and 200 mA/div. ±3%. **Step Currents:** .002, .005, .01, .02, .05, .1, .2, 2, 5, and 10 mA/step, ±3%, ±250 nA offset current max. **Step Voltages:** .05, .1, .2, .5, and 1 volt/step, +3%, ±5mA maximum offset voltage. **Calibration Source:** 9 volts ±2% in 1 volt steps. **Oscilloscope Requirements:** Bandwidth to 20 kHz or greater. (DC-coupled oscilloscope is recommended). **Power Requirements:** 110 to 130 or 220 to 260 VAC. **Dimensions:** 4½" H x 11¼" W x 10" D.

2 FET/Transistor Tester

Reduce your service time with quick, accurate tests of conventional (bipolar) transistors, diodes, FETs, SCRs, triacs and unijunction transistors. Either in-circuit using color-coded test leads supplied or out-of-circuit using built-in sockets. Read gain (DC Beta), transconductance (Gm) and leakage directly. Special circuitry balances out in-circuit impedances. Five current ranges measure leakage to 1 μA and collector currents to 1 A.

Kit IT-121, Shpg. wt. 5 lbs. **62.95**

IT-121 SPECIFICATIONS

DC Beta: 1 to 5000 in ranges of 1 to 50, 5 to 250, 10 to 500, 50 to 2500, 100 to 5000. **Collector Currents Available:** 1 mA, 5 mA, 10 mA, 100 mA, 500 mA, and 1 A. **Gm:** 0 to 50,000 μmhos. **Leakage Measurements:** Five ranges, 0 to 100 μA, 0 to 1 mA, 0 to 10 mA, 0 to 100 mA, 0 to 1 A. **Out-of-Circuit Accuracy:** ±5% for DC beta and leakage. **In-Circuit Accuracy:** Indicates good or bad transistor, FET, diode, SCR or triac. **Diode Test:** Tests for forward conduction and blocking. **Unijunction Transistor Test:** Measures Ieb_2s, Ib_2b_25 and emitter current **Power Requirement:** Two 1½ V cells, (alkaline for best performance), not supplied. **Dimensions:** 5" H x 9⁷⁄₁₆" W x 8⅛" D.

3 Transistor/Diode Checker

Checks high and low power transistors (NPN & PNP) for shorts, leakage, opens and current gain, diodes for forward and reverse current and serves as a continuity checker. Uses two 1.5 V "C" cells, not supplied. 3⅛" H x 3⅛" W x 3¾" D.

Kit IT-27, Shpg. wt. 2 lbs. **10.95**

4 IT-18 Transistor Tester

For reliable in- or out-of-circuit tests. The large, easy-to-read meter permits direct reading of DC Beta (gain) on two ranges, 2-100 and 20-1000. Measures out-of-circuit leakage for transistors and diodes, range 0-5000 μA. Identifies NPN or PNP transistors. Low power circuit will not damage transistor or diode incorrectly connected. Not for use with high power or switching transistors.

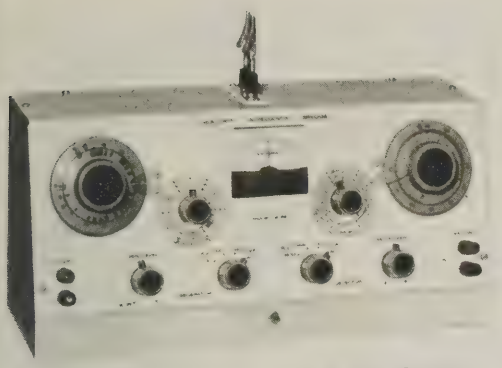
Kit IT-18, Shpg. wt. 4 lbs. **32.95**

IT-18 SPECIFICATIONS

Out-of-Circuit Accuracy: ±5%. **In-Circuit Accuracy:** Indicates good or bad. **Iceo** — 0-5000 μA; **Icho** — 0-5000 μA. **Diodes:** Forward or reverse current — 0-5000 μA. **Power:** One standard "D" cell (not supplied). **Dimensions:** 4½" H x 8½" W x 7⅛" D.

Need probes and cables? See our complete selection on page 67.

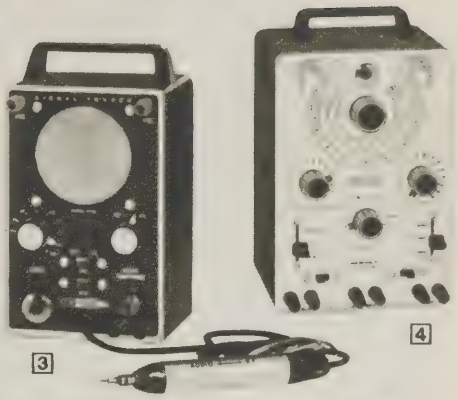
Service or Hobby Bench More Professional



1 $109.95



2 $99.95



3 4

1 Impedance Bridge

Has four separate bridge circuits for accurate measurement of resistance, capacitance, and low & high inductance. Requires headphones or scope for alignment.

Kit IB-28, Shpg. wt. 11 lbs. **109.95**

IB-28 SPECIFICATIONS

DC Measurements: Built-in power supply. Binding posts for external supply. **Meter:** 100-0-100 microampere meter. **AC Measurements:** Built-in 1000 Hz generator. Terminals on panel for external generator. **Detector:** Vacuum tube detector and amplifier, using built-in meter. Terminals for external detector. **Resistance:** 0.1 ohm to 10 megohm. **Capacitance:** 100 pF to 100 μF. **Inductance:** 0.1 mH to 100 H. **Dissipation Factor:** (D) 0.002 to 1. **Storage Factor:** (Q) 0.1 to 1000. **Accuracy:** ½% decade resistors used. **Tube Complement:** (2) 1U4, (2) 1L4. **Power Supply:** Transformer and silicon rectifier. **Power Requirements:** 105-125 V. or 210-250 V., 60/50 Hz, 10 watts. **Dimensions:** 8″ H x 17″ W x 6″ D.

2 Low-cost Tube Checker

Tests tubes on the basis of total emission, for shorts, leakage, open elements, and filament continuity.

Kit IT-17, Shpg. wt. 12 lbs. **99.95**

Updated Tube Chart Subscription Service for all Heathkit Tube Checkers includes new chart plus two supplements per year for only $6.20. Write: Heath Tube Data Service, P.O. Box 377, Hewlett, Long Island, New York 11557.

IT-17 SPECIFICATIONS

Sockets: 4-pin, 5-pin, 6-pin combination and pilot light, 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. **Meter:** 1 mA BAD-?-GOOD scale, illuminated. **Line Voltage Adjustment:** Step type. **Roll Chart Mechanism:** Constant tension, free-rolling, thumbwheel operation, illuminated. **Filament Voltage:** .63, 1.4, 2, 2.35, 2.5, 3.15, 4.2, 4.7, 5, 6.3, 7.5, 9.45, 12.6, 19.6, 25, 32, 50, 70, 110 VAC. **Element Test Voltages:** 30, 100, 250 VAC. **Power Requirements:** 120 VAC, 50/60 Hz. **Dimensions:** 8½″ H x 13″ W x 5½″ D.

3 Visual-aural Signal Tracer

Trace RF, IF and audio signals; locate noisy or intermittent components. Has 3½-inch speaker, bright eye-tube indicator. Audio/RF probe included. 7½″ H x 4½″ W x 4″ D.

Kit IT-12, Shpg. wt. 6 lbs. **32.95**

4 Direct-reading Capacitor Checker

Fast, accurate analysis of all capacitor types. No calculations — just read directly from front-panel scales. Measures capacitance from 10 pF to 1000 μF, resistance from 5 ohms to 50 megohms and 16 leakage testing voltages. Terminals for external standard L, C or R measurements. External audio generator may also be used.

Kit IT-28, Shpg. wt. 7 lbs. **52.95**

IT-28 SPECIFICATIONS

Test Circuit: AC bridge, powered by internal 60 Hz supply or partial external audio generator with 10 V output. **Upper Frequency Limit:** 10 Hz. **Capacitance Ranges:** 10 pF to .005 μF, .001 μF to .5 μF, .1 μF to 50 μF, 20 μF to 100 μF. External standard (comparison bridge; maximum ratio 25:1). **Inductance Check:** External standard only. **Power Requirements:** 120/240 VAC 60/50 Hz, 30 W. **Dimensions:** 9⅝″ H x 6⅝″ W x 5″ D.



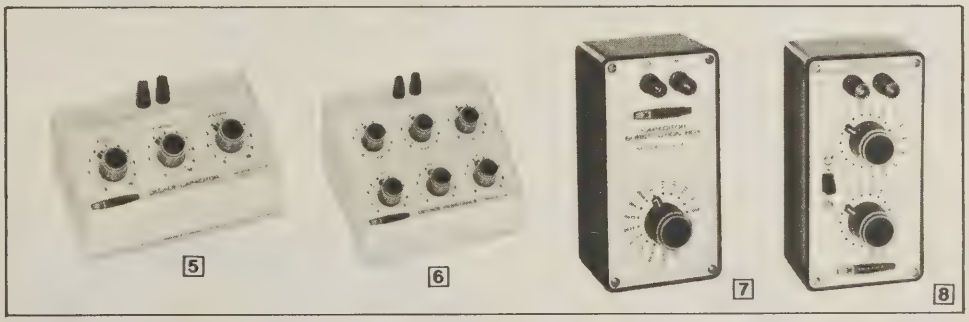
Get more out of your Heathkit test instruments with these valuable books.

Know Your Tube and Transistor Testers — a comprehensive source of information on design & applications of tube & transistor testers. **EDP-147,** **3.50**

Tube Substitution Handbook — lists over 12,000 direct replacements for all types of domestic & foreign receiving & picture tubes. **EDP-174,** **2.25**

Transistor Substitution Handbook — contains substitutions for over 100,000 bipolar transistors. **EDP-175,** **4.50**

See page 48 for book ordering information.



5 6 7 8

5 Decade Capacitance Box

Selects 100 pF to 0.111 μF in 100 pF steps. Ideal for use with the IN-17 in solving R and C network problems.

Kit IN-27, Shpg. wt. 3 lbs. **26.95**

IN-27 SPECIFICATIONS

Voltage Rating: 350 VDC continuous; 500 VDC intermittent; 100 VDC instantaneous test. **Accuracy of Incremental Capacity:** ±1%. **Stray Capacitance:** 10 to 15 pF at terminals. **Dimensions:** 4″ H x 7⅛″ W x 5″ D.

6 Decade Resistance Box

1 ohm to 999,999 ohms in 1-ohm steps. Resistors are 1-watt, ½% accuracy.

Kit IN-17, Shpg. wt. 4 lbs. **39.95**

IN-17 SPECIFICATIONS

Minimum DC Resistance: .025 ohms or less at terminals with all switches at zero. **Dimensions:** 5″ H x 7½″ W x 6⅝″ D.

7 Capacitor Substitution Box

18 EIA standard capacitors from 100 pF to 0.22 μF. Rated at 600 V except 3 lowest and 2 highest values are 500 & 400 V respectively. 5⅜″ H x 3⅛″ W x 3″ D.

Kit IN-47, Shpg. wt. 2 lbs. **10.95**

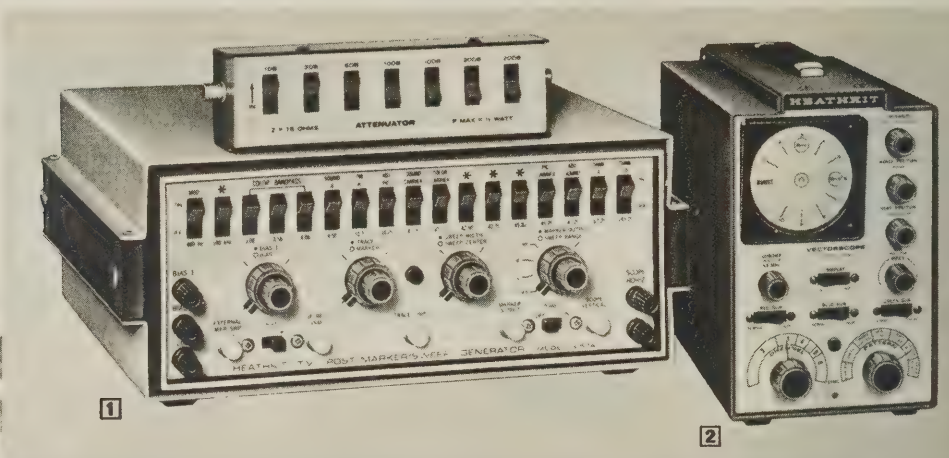
8 Resistor Substitution Box

15 ohms to 10 megohms. 36 EIA standard 10% 1- watt resistors. 5⅜″ H x 3⅛″ W x 3″ D.

Kit IN-37, Shpg. wt. 2 lbs. **10.95**

Heathkit has everything you need for First





1 2

1 Heath Post-Marker/ Sweep Generator

Kit **$164.95**

Assembled **$275.00**

The Heathkit IG-57A checks overall receiver response from the antenna terminals throughout the tuner, IF strip video detector, to the color bandpass amplifier outputs. Sweep modulated picture carriers are available at 45.75 MHz for the tuner mixed input and at 67.25 MHz for the antenna terminal input. And the exclusive Heath external attenuator enables you to accurately set bandwidth in seconds...eliminates guessing at important 6 dB points. Fifteen crystal-controlled markers are provided...four for color bandpass...one for FM-IF...eight for TV IFs from 39.75 to 47.25 MHz...plus picture and sound carrier markers for channels 4 and 10. Accurate location of picture and sound carriers, 6 dB points and trap locations is a breeze with the IG-57A. Three sweep oscillators in stable Colpitts configurations produce five ranges using harmonics for color bandpass, FM IF, video IF bandpass, VHF channels 4 & 10.

Kit IG-57A, Shpg. wt. 15 lbs. **164.95**

Assembled SG-57A, factory-assembled & calibrated version of the IG-57A in handsome black & white styling (not shown), Shpg. wt. 15 lbs. **275.00**

IG-57A SPECIFICATIONS

Marker frequencies: 100 kHz. Marker frequencies. crystal-controlled: 3.08, 3.58, 4.08, and 4.50 MHz ±0.1%. 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, 67.25 and 193.25 MHz ±.005%. **Modulation frequency:** 400 Hz. **Input impedance: External Marker/Sweep, and Attenuator** — 75 ohms. Trace in — 220 k ohms. **Output impedance:** Marker Output, Sweep Output, and Attenuator — 75 ohms. Scope Vert. — 1 k ohms. **Bias voltage:** Two individually adjustable supplies: Positive or negative polarity. **Type of marker:** Birdie. **Controls:** Bias controls, Marker / Trace — dual concentric; Sweep Width / Sweep Center — dual concentric; Marker Out — concentric with Sweep Range switch; and Phase. **Switches:** Rocker type — separate switch for each of the above listed frequencies. Blanking, On/Off. **Sweep frequency ranges and output voltage:** LO Band — 2.5 to 5.5 MHz ±1 dB at 0.5 volts rms (min.) fundamentals, and 10.7 MHz on harmonics. IF Band — 38 to 49 MHz ±1 dB, at 0.5 volts rms (min.) fundamentals. RF band — 64 to 72 MHz ±1 dB at 0.5 volts rms (min.) fundamentals and 192 to 198 MHz on harmonics. **Attenuator:** Total of 70 dB of attenuation in seven steps — 1 dB, 3 dB, 6 dB, 10 dB, 10 dB, 20 dB and 20 dB. **Power requirement:** 120 V, 60 Hz AC at 4.5 watts.

2 Heathkit Vectorscope/ Color Generator

Kit

$144.95

Two necessary instruments in one: a 3 inch vectorscope...and a color bar/pattern generator. The vectorscope displays the ten color bars generated, amplified and demodulated by the color receiver circuitry...accurately represents the chroma signal being fed to the CRT guns. Indicates missing or weak colors, proper adjustment of the burst phase transformer, 3.58 MHz oscillator, reactance coil, bandpass transformer, color demodulation angle. A grid-cathode switch displays all vector patterns the same way, regardless of how CRT is driven.

The color bar/pattern generator provides 12 patterns plus a raster for purity adjustments in either the familiar 9x9 display or the exclusive Heath 3x3 format. Features tuning for channels two through six, RF output variable to 50,000 μV for composite signal injection into receiver antenna terminals, plus or minus going video signals for composite signal injection behind the video detector, front panel sync output, 4.5 MHz crystal controlled sound carrier, lead-piercing grid jacks and front panel gun shorting switches.

Kit IO-101, Shpg. wt. 12 lbs. **144.95**

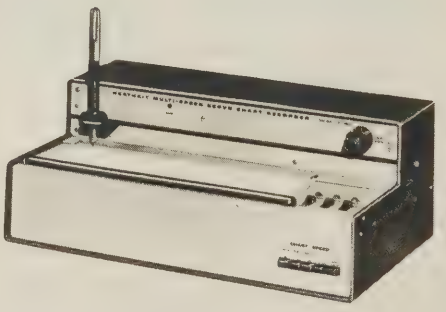
IO-101 SPECIFICATIONS

PATTERNS — Purity: Produces a snow-free raster for purity adjustments. **Dots*:** 9x9 produces a display of 110 small dots. 3x3 produces a display of nine dots. **Crosshatch*:** 9x9 produces a display of 11 vertical and 10 horizontal lines. 3x3 produces a display of three vertical and three horizontal lines. **Horizontal lines*:** 9x9 produces a display of 10 horizontal lines. 3x3 produces a display of three horizontal lines. **Vertical lines*:** 9x9 produces 11 vertical lines. 3x3 produces a display of 3 vertical lines. **Color bars*:** 9x9 produces a display of ten standard color bars. A visual fingerprint (voltage pattern) of all ten color bars in the form of a petal pattern is displayed for color circuit servicing. **Gray scale:** Provides a wide bar crosshatch pattern with six shades of brightness. **OUTPUT SIGNALS — Video:** Greater than ±1 volt peak-to-peak composite signal for composite signal injection beyond the video detector. **Sync:** Greater than 3.5 volts peak-to-peak signal for sync circuits without video, or sets having separate video and sync demodulator phase adjustments. **Power requirement:** 105-125 or 210-250 VAC, 60/50 Hz, 20 Watts. **Dimensions:** 9¼" H x 6¾" W x 14½" D.

*The number of dots, lines, and bars indicated for a 9x9 display is the number displayed if the receiver under test has no overscan.

Heathkit Strip Chart Recorder

$189.95



Has 1 mV or 10 mV full-scale input (selected during assembly); twelve chart speeds from 5 sec./in. to 200 min./in. Power, servo and chart switches, coarse and fine zero controls, floating input with high input impedance. Zener regulated reference voltage supply.

Kit IR-18M, Shpg. wt. 15 lbs. **189.95**

3 rolls chart paper (140 ft./roll).
IRA-18-1, Shpg. wt. 5 lbs. **10.95**

120 ft. roll chart paper. (Recommended for slow chart speeds.)
SU-445-17, Shpg. wt. 2 lbs. **4.75**

IR-18M SPECIFICATIONS

Chart Paper: Grid width, 10". Length, 140 ft. roll. **Markings:** 0-100 right to left. **Chart Speed:** 12 speeds, pushbutton selected. 5, 10, 50, 100, 200 sec/inch and 5, 10, 20, 50, 100, 200 min/inch. **Balancing Time:** Approx. 0.1 sec/inch, 1 second full scale (10"). **Line frequency rejection:** (input shorted). 130 dB in common mode. **Overall error:** Less than 1% of full scale. **Power requirement:** 120/240 VAC 60 Hz, 14W or 120/240 VAC, 50 Hz, 16 W. **Dimensions:** 6", H x 15" W x 9⅛" D.

Charge a kit — no money down on any kit — see page 50 for details.

Class Color TV Servicing



[3]



[3] Versatile Color Bar Pattern Generator

Kit $94.95 **Assembled** $155.00

The IG-28 provides 12 patterns plus a clear raster for purity adjustments, and patterns are available in the exclusive Heath 3x3 display or the familiar 9x9. Has RF output for channels 2 through 6, variable up to 50,000 μV for antenna terminal input, variable plus and minus going video for injection behind the video detector, front panel gun shorting switches and lead piercing grid jacks, front panel sync output, 4.5 MHz sound carrier oscillator, two front panel 500W AC receptacles.

Kit IG-28, Shpg. wt. 8 lbs. **94.95**

Assembled SG-28A, factory assembled & calibrated version of the IG-28 in handsome black & white styling (not shown), Shpg. wt. 9 lbs. **155.00**

ORDER NOW FOR SHIPMENT BY APRIL 26th 1976

IG-28 SPECIFICATIONS

Output signals: Video — Greater than ±1 V peak-to-peak composite signal. RF — Variable to 50,000 μV output, channels 2 through 6. Sync. — Greater than 3.5 V peak-to-peak signal. Control Grids (3) — Individual red, blue, and green control grid signals for viewing chroma signal demodulator phase adjustments. **Power supply:** full wave zener diode regulated. Input — 120/240 VAC, 60/50 Hz. Output — 3.6 VDC, 500 mA, zener diode regulated. **Dimensions:** 5½" H x 13½" W x 8" D.

NEW! IT-5230 Universal CRT Tester/Rejuvenator

$89.95 Kit **$140.00 Assembled**

- **Tests IN-LINE GUN CRT's**
- **Individual meters for each color gun**
- **Separate clean and rejuvenate modes for each gun**
- **Heater/cathode short indicator**

At last, a deluxe CRT tester/rejuvenator priced within reach of most any service shop, and it performs as well as models costing up to three times as much! The IT-5230 will help you test, rejuvenate and clean almost all popular CRT's, *including the new IN-LINE GUN CRT's.* Features simplified pushbutton operation for all test, rejuvenation and cleaning operations which lets you check gun tracking easily, individual grid current meters for each color gun, a separate heater voltage meter to allow precise settings of heater voltage on the CRT. Has lamp to indicate shorts in the CRT, heater voltage and cutoff controls. A special GUN REL/LIFE pushbutton provides an indication of the life remaining in the tube. The restore indicator glows brighter as the rejuvenating current level is increased for an easy visual indication of rejuvenation.

A separate cleaning process is applied after rejuvenation to assure proper operation of the tube. Transformer power supply assures safe, reliable operation even at low line voltages.

The IT-5230 can also be used to clean and rejuvenate computer terminal and oscilloscope CRT's.

You'll find the IT-5230 to be an invaluable addition to your service shop, at a price that's simply hard to beat. It will pay for itself after just a few months in your shop.

Kit IT-5230, Shpg. wt. 10 lbs. **89.95**

Factory Assembled version of above.
ST-5230, Shpg. wt. 10 lbs. **140.00**

IT-5230 SPECIFICATIONS

Sockets Supplied: 14-pin for 90° color tubes; 13-pin for in-line color tubes; 8-pin for black-and-white tubes; 7-pin for black-and-white tubes. **Heater Supply Voltage:** Variable from 2 volts to 12 volts at 1 ampere. **Test Cables Supplied:** 4' heavy duty. **Power Requirement:** 105-135 VAC, 60/50 Hz (50 watts maximum at 60 Hz). **Dimensions:** 5.12" high x 10" deep x 13.5" wide.

Boost your TV service efficiency and profits with Heathkit test gear and these valuable books



How to Use Vectorscope—Oscilloscopes & Sweep-Marker Generators—trouble-shooting & alignment techniques; how to isolate defective ICs and transistors.
EDP-142 .....**5.95**

How to Use Color TV Test Instruments—get the most out of your investment in test gear.
EDP-138 .....**5.95**

See page 48 for book ordering information.

You get better value and performance

- ***Superior performance and benefit/features you just won't find on comparably-priced scopes***
- ***Open chassis design and precision engineering assure you of easy assembly and calibration***



Kit or Assembled



Kit or Assembled

Our best scope — dual-trace, DC to 15 MHz, 1 mV sensitivity

The Heathkit IO-4510 has vertical delay lines, 45 MHz typical trigger bandwidth and a maximum sensitivity of 1 millivolt over full vertical bandwidth.

Digitally-controlled time base provides automatic triggering — no stability control is necessary. Baseline is generated when trigger signal is absent. Trigger Select switch and Level control precisely trigger time base at any point along + or − slope. The automatic position of level control triggers at zero crossing point.

Modes of display are selected by position control for each channel and Time Base switch. Either channel can be displayed as a function of time, or both can be displayed together chopped (200 kHz) or alternate modes automatically selected by time base switch. Time Base control provides 20 calibrated time bases from 0.2 sec/cm to 0.1 μsec/cm in 1, 2, 5 sequence, continuously variable between switch positions.

A line switch matches the regulated power supply to common line voltages from 100 volts to 280 volts AC. Major circuitry is contained on five circuit boards. And push-on connectors permit fast removal of any board. 6 x 10 cm CRT with illuminated graticule has post-deflection acceleration for brighter trace and faster writing speeds.

IO-4510 calibration requires precise source of square waves such as IOA-4510-1 or IG-4505, see page 67.

Kit IO-4510, Shpg. wt. 34 lbs. **569.95**

SO-4510, factory assembled & calibrated version of IO-4510, Shpg. wt. 28 lbs. **775.00**

IO-4510 SPECIFICATIONS

VERTICAL: Deflection Factor: Sensitivity: 1 mV/cm to 5 V/cm in a 1-2-5 sequence. **Variable:** Continuous between steps to approx. 15 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 15 MHz. **AC Coupling:** 2 Hz to 15 MHz. **Rise Time:** 24 ns. **Overshoot:** <3%. **Delay Line:** Allows display of at least 20 ns of pre-triggered waveform. **Vertical Input: Impedance:** 1 MΩ shunted by ≈40 pF. **Maximum Input:** 400 V. **HORIZONTAL: Accuracy:** Within 3%. **Magnifier:** X5. **External: Sensitivity:** 0.2 V/cm (approx.). **Impedance:** 200 kΩ (approx.). **Frequency Response:** DC to 1 MHz. **TRIGGER: Internal: Automatic:** Zero crossing 0.5 cm. **Normal:** Adjustable over 8 division. **Slope Selection:** + or −. **External: Automatic:** Zero crossing ±0.2 V. **Normal:** Adjustable over ±5 V. **Slope Selections:** + or −. **Impedance:** 1 MΩ shunted by ≈30 pF. **X-Y: Y Channel:** Same as vertical. **X Channel:** Same as vertical, except response limited to 1 MHz and no delay line. **Phase Shift:** Less than 3° @ 100 kHz. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 6.4″ H x 12.9″ W x 19.3″ D (without handle).

Heathkit IO-4530...a fine general-purpose scope...perfect for TV service and home experimenting

Features like TV coupling, DC-10 MHz bandwidth, wide-band triggering capability, 10 mV/cm vertical input and calibrated X-channel input make it a versatile scope for the service technician or hobbyist. Y-input has maximum sensitivity of 10 mV with 11-position attenuator to set deflection from 10 mV/cm to 20 V/cm. For true X-Y operation, a calibrated X-input is provided with maximum sensitivity of 20 mV. Its calibrated 3-position attenuator provides three AC or DC ranges from 20 mV/cm to 2 V/cm. Trigger circuits are digitally controlled, requiring only a Level control and a Slope switch. In automatic, triggering is at the zero crossing point. In normal, the level control is adjustable over the complete 8 cm span. In the TV trigger coupling, the 4530 can be precisely triggered on the vertical signal in a complex TV signal. Calibration requires a source of square waves such as the IOA-4510-1 or IG-4505, see page 67.

Kit IO-4530, Shpg. wt. 30 lbs. **299.95**

SO-4530, factory assembled & calibrated version of IO-4530, Shpg. wt. 26 lbs. **425.00**

IO-4530 SPECIFICATIONS

VERTICAL: Variable: Continuous between steps to approx. 50 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 10 MHz. **AC Coupling:** 2 Hz to 10 MHz. **Rise Time:** 35 ns. **Overshoot:** <5%. **Vertical Input: Impedance:** 1 MΩ shunted by ≈38 pF. **Maximum Input:** 400 V. **HORIZONTAL: Time Base: Ramp:** 0.2 S/cm to 200 ns/cm in decade sequence. **Variable:** Continuous between ranges to approximate 2 s/cm. **Accuracy:** Within 5%. **Magnifier:** X5. **External: Deflection Factor: Sensitivity:** 0.02 V/cm to 2 V/cm in decade sequence. **Variable:** Continuous between steps to approx. 20 V/cm. **Accuracy:** Within 3%. **Response: DC Coupling:** DC to 1 MHz. **AC Coupling:** 2 Hz to 1 MHz. **Rise Time:** 35 nS. **Overshoot:** <5%. **Input: Impedance:** 1 mΩ shunted by ≈40 pF. **Max. Input:** 400 V. **TRIGGER: Internal: Automatic:** Zero crossing ±0.5 cm. **Normal:** Adjustable over 8 divisions. **Slope Selection:** + or −. **External: Automatic:** Zero crossing ±0.03 V. **Normal:** Adjustable over 1.2 V. **Slope Selections:** + or −. **Impedance:** 1 MΩ shunted by ≈40 pF. **X-Y: Phase Shift:** Less than 5° @ 100 kHz. **GENERAL: CRT:** 5″ round. **Phosphor:** P31. **Graticule:** 8 x 10 cm. **Power:** 110-130/220-260 VAC, switch selected, 65 watts. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 6.4″ H x 12.8″ W x 19.2″ D (without handle).

Charge a kit — no money down on any kit — see page 50 for details.

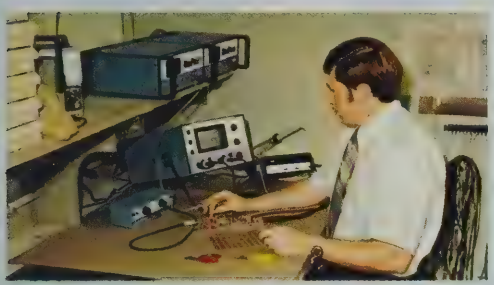
in scopes from the Heath labs



For Schools — an ideal student scope, easy to operate, easy to understand



TV Servicing — excellent for stage by stage troubleshooting



Lab Work — circuit design, testing components, checking assembly

New

A bright new dual-trace scope to round out your bench

The Heathkit IO-4550 brings you professional features at a low kit-form price



Kit or Assembled

Brighter trace and faster writing speed in our new 10 MHz dual-trace scope...kit or assembled.

Here's how extensive engineering research in the Heath lab pays off for our customers. Introducing our new IO-4550 10 MHz scope... at a price that will let you get it onto your bench for a lot less than other scopes with similar features.

Its broad base of applications is sure to make the IO-4550 appealing to anyone with a scope interest. Use it for TV and general electronics servicing, digital experimentation...even for your electronic design efforts.

The biggest news about the IO-4550 is that it features a brighter trace and faster writing speed than other 10 MHz scopes at a similar price...in fact, it's the brightest 10 MHz scope we've ever offered, so you're assured of an easy-to-read trace, even in high ambient light.

To maximize operational ease, input channels are displayed, chopped or alternate, as selected automatically by the Time Base switch. Exacting X-Y operation assures you of precise phase measurements.

The 4550's digitally-controlled time base circuitry provides automatic triggering, so no stability control is necessary and fewer adjustments are required. It also lets you determine the frequency of a waveform.

- ***A complete mu-metal shield is used in the IO-4550 to eliminate display error caused by electromagnetic interference***
- ***The fully-regulated high voltage supply allows accurate operation over widely-varying line voltages***
- ***All IC's are socketed for easy servicing and troubleshooting***

The fully regulated high voltage supply assures operation to specifications on standard line voltages from 100-270 volts. And a mu-metal shield prevents interference from stray magnetic fields.

Improved circuitry and only four epoxy glass printed circuit boards, with plug-in IC's, make the IO-4550 an easy-to-assemble kit. Establish a new standard for your test bench today...order the IO-4550. Calibration requires a precise source of square waves such as IOA-4510-1 or IG-4505, see page 67.

Kit IO-4550, Shpg. wt. 31 lbs. **379.95**

SO-4550, factory assembled & calibrated version of IO-4550, Shpg. wt. 26 lbs. . . **525.00**

IO-4550 SPECIFICATIONS

VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. **Attenuator:** 11 steps in 1-2-5 sequence; **Variable:** Continuous between steps to approximately 60 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 10 MHz. **AC Coupling:** 2 Hz to 10 MHz. **Rise Time:** 35 ns. **Overshoot:** Less than 5%. **Vertical Input: Impedance:** 1MΩ shunted by 38 pF. **Maximum Input:** 400 V. **HORIZONTAL: Time Base: Ramp:** 0.2 s/cm to 200 ns/cm. **Positions:** 19 steps in 1-2-5 sequence. **Variable:** Continuous between ranges to approximately 0.6 s/cm. **Accuracy:** Within 3%. **Magnifier:** X5 (adds additional 2% to sweep accuracy). **External: Sensitivity:** 0.1 V/cm (approx.). **Impedance:** 100 kΩ (approx.). **Frequency Response:** DC to 1 MHz. **Connector:** BNC. **TRIGGER: Internal: Automatic:** Adjustable over 10 divisions. **Normal:** Adjustable over 10 divisions. **Slope Selection:** + or —. **External: Automatic:** Adjustable over 0.8 V. **Normal:** Adjustable over 0.8 V. **Slope Selection:** + or —. **Impedance:** 1 MΩ shunted by 40 pF. **Connector:** BNC. **X-Y: Y Channel:** Same as Vertical. **X Channel:** Same as vertical except response is limited to 1 MHz. **Phase Shift:** Less than 8° @ 100 kHz. **GENERAL: CRT: Type:** 5″ round. **Acceleration Potential:** 1.8 kV regulated. **Phosphor:** P-31. **Graticule:** 8 x 10 cm. **Power: Voltage Range:** 100-135 VAC/200-270 VAC switch selected, 70 watts at 120 VAC (240 VAC). **Internal Supplies:** Fully regulated. **Operating Temperature:** 10°C to 40°C. **Dimensions:** 6.9″ H x 12.9″ W x 19.3″ (without handle).

Add Heathkit scope versatility at amazing low cost

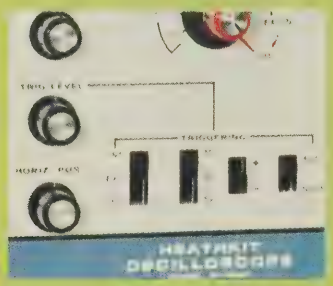


Our Lowest Priced Scope! $119.95



$179.95

DC-5 MHz 'scope for serviceman or hobbyist... kit or assembled



Complete trigger controls include TV coupling for easy triggering on complex TV signals.

The Heathkit IO-4540 can quickly provide an accurate display of any waveform within its wide 5 MHz bandwidth — without the "fine tuning" required of the more expensive oscilloscopes in its performance class. The DC-5 MHz bandwidth and sensitive input make it ideal for servicing audio, TV and receiver circuitry.

A stable triggering circuit is used for solid waveform displays (not the recurrent type sweep generator normally used in scopes in its price range). Trigger controls include selection of normal or automatic modes, switch-controlled AC or DC coupling and front panel input for external triggering signals. The trigger selector control allows the 4540 to trigger on the vertical component of a complex TV signal.

Seven calibrated time bases from 200 ms to 0.2 μs/cm can be selected by the TIME/CM switch. Horizontal amplifier accepts inputs from DC to 100 kHz with 1 megohm input impedance. Vertical input sensitivity of 20 mV/cm and nine calibrated vertical attenuator positions up to 10 volts/cm accommodates a broad range of input signals. Variable gain for precise control between settings. Input impedance is 1 megohm shunted by 38 pF and will accept up to 400 VDC.

Regulated low-voltage power supplies provide stable voltages to all circuits under varying line voltage and load conditions. A sine-square wave generator is needed for calibration.

Kit IO-4540, Shpg. wt. 25 lbs. **179.95**

SO-4540, factory-assembled & calibrated version of IO-4540, Shpg. wt. 24 lbs. **275.00**

IO-4540 SPECIFICATIONS

VERTICAL: **Bandwidth:** DC to 5 MHz ±3 dB. **Attenuator:** 1, 2, 5 sequence, calibrated and variable. **Rise Time:** 70 ns. **Overshoot:** 5% at 1 kHz. **Impedance:** 1MΩ/38 pF. **Sensitivity:** 20 mV/cm. SWEEP: **Type:** Triggered. **Range:** 200 ms — .2 μs, 7 steps plus variable. **Trigger Source:** Int/Ext/Line. **Trigger Modes:** AC/DC/TV; +/— Slope; Auto/Norm. HORIZONTAL: **Sensitivity:** .25 V/cm. **Bandwidth:** DC to 100 kHz. **Impedance:** 1MΩ/50 pF. **Ext. Horiz. Input:** X1 and X10 attenuator. GENERAL: **CRT:** 5DEP31F, 8 x 10 cm, green, medium-persistence phosphor, 5″ round, flat-face tube. **Accelerating Potential:** Approx. 1.5 kV. **Graticule:** Painted, 8 x 10 cm. **Power Requirements:** 110-130 VAC or 220-260 VAC, 60/50 Hz, 35 watts. **Dimensions:** 8″ H x 13″ W x 17″ D.

Super-value auto-triggering scope ...DC-5 MHz, 100 mV sensitivity



The open chassis design of the IO-4560 makes it an easy kit to assemble — a great 'scope for student or home experimenter.

Now you can have the most universal of all test instruments on your bench — the oscilloscope — at a low kit form price. The 4560 permits study of complex signals, such as those found in audio devices, television receivers, transmitters and other electronic equipment. And operation couldn't be easier...in addition to the power switch, there are only nine switches and controls.

Auto-triggering provides automatic, positive locking of the displayed waveform. A stable display is assured for any frequency up to the full 5 MHz bandwidth. The uncalibrated sweep speed control provides continuous adjustment from 20 ms/cm to 200 ns/cm.

The DC to 5 MHz vertical bandwidth is more than adequate for general design and service work. Maximum vertical sensitivity is 100 mV with a front panel switch for X1, X10 and X100 attenuation, AC or DC. For phase and frequency measurements, an external horizontal input can be applied directly through the front panel input jack. It has 250 mV sensitivity with DC to 100 kHz bandwidth. Zener-regulated low voltage supplies assure display stability. The primary circuit of the power transformer is fused for protection from overload.

The IO-4560 is an easy oscilloscope to build, making it a great kit for hobbyists and students. Assembly instructions are easy to understand, and a complete troubleshooting table helps you find the problem if anything goes wrong.

Kit IO-4560, Shpg. wt. 19 lbs. **119.95**

IO-4560 SPECIFICATIONS

VERTICAL CHANNEL: **Input Impedance:** 1 megohm. **Sensitivity:** 100 mV/cm. **Maximum Input Voltage:** 400 volts DC. **Frequency Response:** DC to 5 MHz ±3 dB. **Attenuator:** X1, X10, X100, AC or DC. HORIZONTAL CHANNEL: **Input Impedance:** 100 kΩ. **Sensitivity:** 0.25 volt/cm (uncalibrated). **Frequency Response:** DC to 100 kHz. TIME BASE: **Sweep:** 20 ms to 0.2 μs/cm (uncalibrated). **Trigger Mode:** Automatic. GENERAL: **CRT:** 5DEP31F, 8 x 10 cm viewing area. Blue-green, medium persistance phosphor. 5″ round, flat-face tube. **Graticule:** 8 x 10 cm. **Power Requirements:** 110-130 or 220-260 VAC. 60/50 Hz 35 watts. **Dimensions:** 8″ H x 13″ W x 17″ D.

Charge a kit — no money down on any kit — see page 50 for details.

Precision Scope Switch and Calibrators



$44.95

Heathkit ID-101 Scope Switch permits simultaneous display of two separate input signals

Gives any single beam scope dual-signal versatility! Provides simultaneous display of two separate input signals for comparison, observing phase relationships, etc. Also can be used as impedance coupler, preamp or square wave generator in experimental circuits. A sync output on each channel permits scope sweep to be locked to either input signal. DC coupling adds versatility. Frequency response — DC-5 MHz + 1½ dB, —3 dB.

Kit ID-101, Shpg. wt. 6 lbs. **44.95**

ID-101 SPECIFICATIONS

Signal gain: >10 times. **Maximum input signal:** 600 VDC or 600 VAC p-p. **Input impedance:** 1 megohm/50 pF. **Maximum signal output:** 8 V p-p. **Output loading:** 1000 ohm minimum. **Hum and noise:** (single channel only). <40 mV p-p. **Chopping rates:** Approx. 100, 500, 1000 and 5000 Hz. **Power requirements:** 120/240 V, 60/50 Hz, 6 W. **Dimensions:** 4¼" H x 10⅜" W x 5⅛" D.



IOA-4510-1 Scope Calibrator

The Heathkit IOA-4510-1 is an easy-to-build, easy-to-use crystal-controlled time base designed by Heath's 'scope engineers for oscilloscope calibration. It provides everything you need to accurately calibrate your new Heathkit IO-4510 or IO-4530. It generates a square wave signal with selected ranges from 1 MHz to 1 kHz at TTL output levels. The 1 kHz output level can be adjusted from 0 to 4.7 volts peak. Draws operating power from IO-4510 or IO-4530.

Kit IOA-4510-1, Shpg. wt. 1 lb. **14.95**



Useful Scope Books

Understanding and using the Oscilloscope — details basic functions, circuits, inputs, pulses & waveforms; outlines every electronic test you're likely to make. **EDP-139** **5.95**

101 Ways to Use your Oscilloscope — practical working handbook for faster servicing; new info on wide-band & triggered-sweep scopes; covers testing of b/w & color TV sets.

EDP-149 .....**4.95**

See page 48 for book-ordering information

$44.95

IG-4505 Deluxe Scope Calibrator for oscilloscopes with bandwidths to 35 MHz

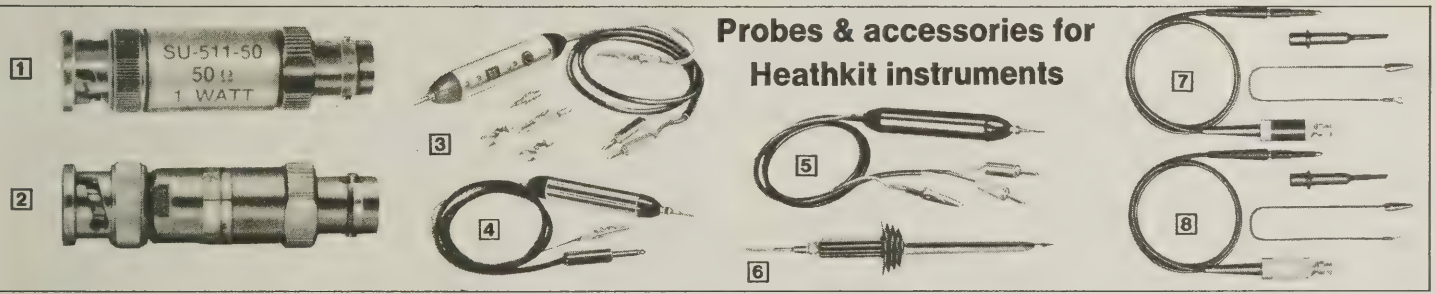
The IG-4505 is a practical oscilloscope calibrator at a sensible price. It provides all the waveforms necessary to adjust sweep speeds, vertical calibration, delay line terminations, high frequency compensation and attenuator compensation for oscilloscopes with bandwidths up to 35 MHz. Round out your test bench today...order the IG-4505.

Kit IG-4505, Shpg. wt. 4 lbs. **44.95**

IG-4505 SPECIFICATIONS

TIME CALIBRATION: Range: .5 sec. to 1 μs square wave in 1-2-5 sequence, accurate to within .01%. **Amplitude:** ≈200 mV peak. **Rise Time:** ≤4 ns. **Overshoot:** ≤3%. **Output:** 50 ohms terminated cable. **VOLTAGE CALIBRATION: Ranges:** 1 mV to 100V peak square wave in decade sequence. **Accuracy:** To within 2% with 1MΩ load referenced to 1V position. **Rise Time:** ≤2 μs. **Frequency:** DC, 2 Hz to 10 kHz in 1-2-5 sequence. **Accuracy of Internal Standard:** Within 1%. **Power Requirements:** 120-240 Volts AC, 60/50 Hz, 12 watts.

Probes & accessories for Heathkit instruments



[1] **50-ohm Termination** for frequency counters and scopes. DC to 1 GHz; power rating, 1 watt. VSWR; 250 MHz, 1.2:1; 600 MHz, 2:1.

Assembled SU-511-50; Shpg. wt. 1 lb. **15.00**

[2] **RF Fuse** in UHF BNC-to-BNC connector. Prevents accidental burnout. DC to 500 MHz range; 50 ohms impedance; 12:1 VSWR (max.); insertion loss 1.80 dB max. at 500 MHz. With spare fuses.

Assembled SU-512-50, Shpg. wt. 1 lb. **45.00**

[3] **Low capacitance scope probe** provides direct or X10 attenuated operation; options for 3.3 or 1 megohm input resistance.

Kit PK-1, Shpg. wt. 1 lb. **5.95**

[4] **Etched circuit RF probe** for RF measurements from 1000 Hz to over 100 MHz; 11 meg input; 1000 VDC max. at tip; 90 V rms max.

Kit PK-3, Shpg. wt. 1 lb. **5.95**
Assembled PKW-3, Shpg. wt. 1 lb. **7.95**

[5] **Scope demodulator probe** for distortion checks and display of RF & IF signal. 30 V rms max., 500 VDC max.

Kit 337-C, Shpg. wt. 1 lb. **5.00**

[6] **High frequency compensated scope probe** features DC-60 MHz bandwidth; 10 megohm/11.5 pF input impedance; X10 attenuation; 500 V AC & DC rating. Ideal for IO-104, IO-4510 and IO-4530 scopes.

Assembled PKW-101, Shpg. wt. 1 lb. **26.95**

PKA-101-1 Accessory Pack. Includes three assembled tips, two 6-inch ground leads and one 12-inch ground lead.

PKA-101-1, Shpg. wt. 1 lb. **9.95**

[7] **Direct (X1) scope probe** for scopes, frequency counters or checking waveforms and levels in any low impedance circuit. 1 megohm/30 pF input impedance. 600 V AC & DC rating. Range 17 MHz typical. Rise time 17 nsec. typical.

Assembled PKW-104, Shpg. wt. 1 lb. **21.95**

[8] **30 kV High Voltage Probes...IMA-100-10 Probe** multiplies DC ranges of any 10-megohm meter by 100. 1000 megohm input measures voltages as low as 1V in high-impedance circuits. Banana plug connector.

Kit IMA-100-10, Shpg. wt. 1 lb. **10.95**

IMA-100-11 Probe provides X100 measurement capability for meters with 11-megohm input impedance. Phone plug connector with alligator ground clip. Available kit or assembled.

Kit IMA-100-11, Shpg. wt. 1 lb. **10.95**

Assembled SMA-100-11, Shpg. wt. 1 lb. ...**13.95**
IMA-1000-1 Probe provides X1000 attenuation for meters with 1-megohm input impedance. Banana plug connector.

Kit IMA-1000-1, Shpg. wt. 1 lb. **10.95**
Accessory cables...for inter-connecting scopes, counters, etc. All cable is RG-58/U, 50 ohm impedance. Shpg. wt. (each), 1 lb.

Assembled SU-501-1, 1 ft., BNC/BNC **7.50**
Assembled SU-501-3, 3 ft., BNC/BNC **7.50**
Assembled SU-501-6, 6 ft., BNC/BNC **7.50**
Assembled SU-502-3, 3 ft., BNC/UHF **7.50**
Assembled SU-503-3, 3 ft., BNC/Banana **7.50**

Here's easier circuit design from Heath



New

Heathkit ET-3300 lab breadboard makes circuit development simpler ...for experimenters, students and design engineers

Here's everything you could want for basic solid-state circuit design and development...in one neat package. The new Heathkit ET-3300 is a laboratory breadboard with solderless sockets and built-in power supplies...and that means convenient, easy circuit hook-up and fast teardown.

The ET-3300 can be as versatile as you like. It's an excellent aid for hobbyists and technicians in laboratory experiments; or the "3300" can be used by designers for building up a prototype of a new circuit design. And many of your troubleshooting efforts will be made easier because the ET-3300 is great for testing electronic components and circuits, even can be used as a power supply!

Unique features include three dual ground and power bus strips and four breadboarding sockets, each with forty-eight dual rows of common connection points. The "3300" accommodates both discrete components and integrated circuits...and its solderless connectors accept up to #20 solid wire. For maximum versatility and ease in circuit design and development, get your ET-3300 today.

Kit ET-3300, Shpg. wt. 6 lbs. **79.95**

ET-3300 SPECIFICATIONS

OUTPUTS: +5 VDC @ 1.5 amps; +12 VDC @ 100 mA; −12 VDC @ 100 mA. REGULATION: Load: Less than 2% variation from no load to full load on all supplies. CURRENT LIMITING: Fixed current limiting of each supply at rated current provides short-circuit protection. POWER REQUIREMENT: 120/240 VAC 60/50 Hz 30 watts at full load. SIZE: 3½" H x 12" W x 12" D.

There are 47 Heathkit Electronic Centers* to serve you coast to coast

Check the white pages of your telephone directory for address and phone no.

ARIZONA
Phoenix

CALIFORNIA
Anaheim
El Cerrito
Los Angeles
Pomona
Redwood City
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Woodland Hills

COLORADO
Denver

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Miami (Hialeah)
Tampa

GEORGIA
Atlanta

ILLINOIS
Chicago
Downers Grove

INDIANA
Indianapolis

KANSAS
Kansas City (Mission)

KENTUCKY
Louisville

LOUISIANA
New Orleans (Kenner)

MARYLAND
Baltimore
Rockville

MASSACHUSETTS
Boston (Peabody)
Boston (Wellesley)

MICHIGAN
Detroit
East Detroit

MINNESOTA
Minneapolis (Hopkins)

MISSOURI
St. Louis (Bridgeton)

NEBRASKA
Omaha

NEW JERSEY
Fair Lawn

NEW YORK
Buffalo (Amherst)
Jericho, Long Island
New York
Rochester
No. White Plains

OHIO
Cincinnati (Woodlawn)
Cleveland
Columbus
Toledo

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Pittsburgh

RHODE ISLAND
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Offers complete descriptions, specifications and prices for many high performance instruments for industrial and educational applications. Included are frequency counters...oscilloscopes ...power supplies...function generators...TV and audio service equipment...multimeters...strip chart recorders...and more.

To see how easy it is to get more instrument value per dollar, send the coupon at left for your free copy of our latest catalog. We'll also place you on our mailing list to receive future catalogs and keep you informed about the latest from Heath/Schlumberger.

Heath CB Special: FREE Antenna

Worth up to $39.95 when you buy Johnson CB 2-Way Radio from Heath

World-famous Johnson CB two-way radio is now an even better buy at Heath! Choose the base or mobile unit that meets your needs — get a FREE Antenna Specialists CB base or mobile antenna! See below for antenna descriptions.

Deluxe Base Station Messenger 250

$244.90 *Ready to go with ALL CB crystals included — FREE Antenna*

One of the finest CB two-way radios around...100% solid-state design, large professional controls with full lighted metering for real operating convenience. Has electronic speech compression for extra transmit range, special voice tailored audio for crisp, clean reception. Covers all 23 CB channels with 4-watt output. 5 5/16" H x 11" W x 9 13/16" D. Brown/beige cabinet with walnut grain vinyl front panel insert. Operates on 117 VAC. With all CB crystals, microphone.

Model GWP-102, Shpg. wt. 16 lbs. Assembled. **244.90**



The low-priced Messenger 123A

$159.95 *An Outstanding Choice for Dependable Mobile Communications — FREE Antenna Too!*

Hundreds of thousands chose this model as the best CB value! Proven 100% solid-state chassis with speech compression, automatic noise limiter, "steep skirt" mechanical selectivity filter and acoustically isolated speaker. Lighted meter shows relative transmitter output and received signal strength. 23 channels and maximum legal power. 4 watts output, full band coverage, FCC type accepted, and fully assembled — ready to go anywhere. Just 2½" H x 6¾" W x 9⅝" D and operates on 12 VDC neg. ground power. For base station use, just add the optional desk stand/AC supply. Includes all CB crystals, microphone, mounting bracket and instructions.

Model GWP-100, Shpg. wt. 6 lbs. Assembled. **159.95**

Model GWP-100-1, AC supply, Shpg. wt. 4 lbs. **37.50**



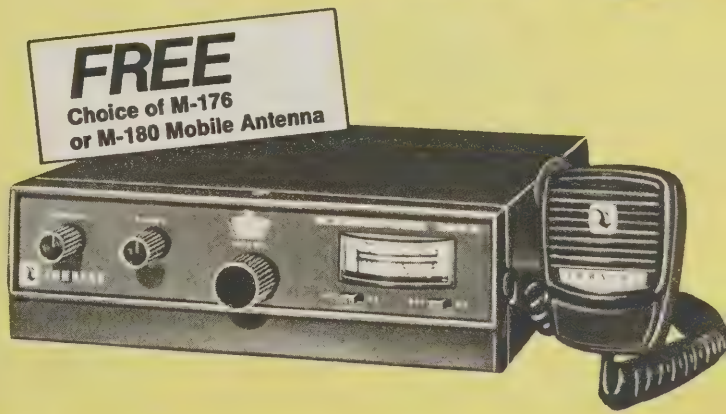
The best mobile we sell—Messenger 323A

$249.95 *For the Serious Mobile CB'ers... a Rig That's Really Loaded — FREE Antenna Too!*

Breakthrough in design...single conversion with dual cascade crystal filtering for spectacular freedom from interference. A separate noise blanker can be switched on to cut troublesome ignition pulse noise. An automatic noise limiter switches on when noise is present and off when not needed for maximum fidelity. Has front panel S/PRF meter, lighted channel indicator. An extra feature is its built-in PA function that lets you operate it as a PA system for meetings, traffic control, etc. Full 23 channel coverage; 4 watts output; FCC Type Accepted; hand held mike included. Size: 2½" H x 8" W x 9½" D; requires 12 volts DC power, positive or negative ground. Order AC supply to operate as base station.

Model GWP-101, Shpg. wt. 9 lbs. Assembled. **249.95**

Model GWP-101-1, AC supply, Shpg. wt. 5 lbs. **46.50**



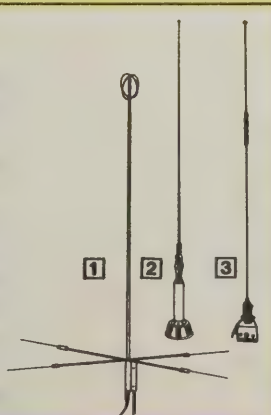
CB Antennas

FREE with purchase of CB Radio!

[1] **Antenna Specialists M-117 "Super Magnum" Base Antenna.** ½ wave end-fed design gives 3.75 dB gain, improves S/N 6 dB! Curved static-reduction ball at top.
Model GDP-2120, Shpg. wt. 9 lbs. ...**39.95**

[2] **Antenna Specialists M-176 "Quick-Grip" Mobile Antenna.** Trunk lid mount (no holes to drill); 46" high; weatherproof loading coil, DC grounded with 17' coax.
Model GDP-2121, Shpg. wt. 3 lbs. ...**26.95**

[3] **Antenna Specialists MR-180 "Flipper" Mobile Antenna.** Rain-gutter mount (no holes to drill). Chrome plated clamp and fittings. With 10' coax.
Model GDP-2122, Shpg. wt. 3 lbs. ...**22.95**



Informative CB Books



ABC's of Citizens Band Radio; new updated 128 page edition tells how to get started, choose equipment, channels, accessories, and get your license.
EDP-212 (SAMS) **4.25**

99 Ways to Improve Your CB Radio; 2nd edition.
EDP-214 (SAMS) **3.95**

Citizens Band Radio Handbook; 4th edition.
EDP-213 (SAMS) **5.50**

From CB to Ham Beginner; all the information needed to make the transition to ham radio; techniques, code, 144 p. **EDP-215** (SAMS) **4.75**

Questions & Answers About CB Operations; new edition. **EDP-216** (SAMS) **3.75**

See page 48 for book ordering information.



Charge a kit — no money down on any kit — see page 50 for details.

Handheld, base or mobile, build-it-yourself



Super-Value HW-2021 Handheld 2-Meter Transceiver

$169.95

Compare features, compare specs and you'll be convinced — the HW-2021 is the best handheld 2-meter rig around. A single crystal controls both transmit and receive. The simplex/offset switch selects −600 kHz or simplex crystals (included) to give you two transmit frequencies for each crystal you buy. Or substitute your own crystals for any two offset frequencies desired. We include a 146.94 MHz crystal with the HW-2021 to get you on the air in a hurry. Transmitter output is one watt minimum with 0.005% or better stability. FM circuitry and a separate microphone contribute to better audio. The optional HWA-2021-3 auto-patch encoder gives you access to telephone lines through repeaters with touch-tone input — adds telephone versatility at remarkably low cost. Pulse-type battery saver circuit extends battery life by about 75% in the standby/receive mode. The rechargeable battery pack operates the HW-2021 for approximately 10 hours on one charge. The battery charger recharges the batteries fully in about 16 hours. Compact and rugged, with textured black high-impact case. Weighs just 2 lbs. including batteries. Not recommended for beginning kit builders due to its compactness. Requires small 25-watt soldering iron such as Weller W-PS for construction, and VOM or VTVM for alignment. Order additional crystals below.

Kit HW-2021, Shpg. wt. 4 lbs. **169.95**

HWA-2021-2, Carrying Case and Strap, Shpg. wt. 1 lb. **12.95**

Optional Auto-Patch Encoder.

Kit HWA-2021-3, 1 lb. **39.95**

HW-2021 Crystal Certificates.

HWA-2021-4 postpaid **6.95**



Select any of 5 channels, adjust volume and squelch with convenient top-mounted controls.



Includes rechargeable nickel-cadmium battery pack and AC charger.



Flexible "rubber duckie" antenna, matched to transceiver is included, plus jack for external antenna.



Optional vinyl case, Auto-Patch Encoder for phone calls through repeaters with touch-tone input.

Optional Auto-Patch Encoder Shown Installed

HW-2021 SPECIFICATIONS

RECEIVER — Sensitivity: 0.5 μV for 12 dB SINAD; 0.75 μV for 20 dB quieting. Squelch Threshold: .3 μV or less. Audio Output: .5 watts at less than 10% THD. Image Rejection: Greater than −45 dB. IF Frequency: 10.7 MHz. Modulation Acceptance: ±7 kHz minimum. TRANSMITTER — Power Output: 1 watt minimum. Oscillator Frequency: Approximately 15 MHz. Multiplier Factor: x9. Modulation: Frequency (with limiting). GENERAL — Speaker Impedance: 8Ω. Operating Frequency Range: 143.9 to 148.3 MHz (unit will meet specifications ±1 MHz from alignment frequency within this range). Operating Temperature Range: +10° to +120°F (−12° to +47°C). Operating Voltage: 12 VDC nominal. Size (overall): 9¼" x 1⅞" x 3¼". Weight (including batteries): 2 lbs.



2-Meter Amplifier boosts the power of the HW-2021

For anyone who wants extra output at low cost, the HA-201 delivers up to 10 watts for a 1½ watt input, 8 watts for a 1 watt input — ideal for use with the HW-2021 above. Features fully automatic operation, solid-state transmit/receive switching, tuned input and output for maximum efficiency and reduced spurious emissions. *Withstands infinite VSWR load without failure.* Includes dummy load and RF detector. Easy 1 to 2 hour assembly. VTVM needed for tuneup. Operates from 12-16 VDC. (HWA-202-1 or car battery).

Kit HA-201, Shpg. wt. 3 lbs. **27.95**

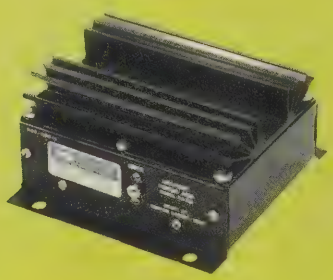


Read all about 2-Meter Repeaters

2-Meter FM Repeater Circuits Handbook — a comprehensive guide to repeaters, antennas, transmitters, receivers, and much more.

EDP-114 . . . . . **6.95**

See page 48 for book ordering information.



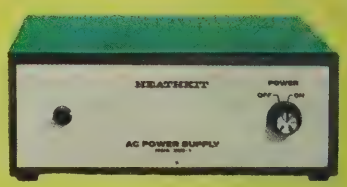
40W 2-meter amplifier for HW-202

Delivers solid 40W minimum for 10 watts in. Draws just 7A max. from your car battery. Has automatic T/R switching, tuned input/output circuits. Withstands VSWR's up to 3:1. Covers any 1.5 MHz portion of the 143-149 MHz band. Final alignment requires VTVM, wattmeter or SWR bridge.

Kit HA-202, Shpg. wt. 4 lbs. **59.95**

HA-202 SPECIFICATIONS

Power Output: 20W @ 5W in. 30W @ 7.5W in. 40W @ 10W in. 50W @ 15W in. Impedance: 50 ohms nom. Power Requirement: 12-16 VDC, 7 A max. Dimensions: 3" H x 4¼" W x 5½" D.



HW-202 AC Power Supply

Use your HW-202 as a base station. Delivers 13.8 VDC at 2.2 A with better than 1.0% regulation. Has 120/240 VAC wiring options, circuit breaker protection. With cables and 3-wire line cord. 3" H x 7¼" W x 10" D.

Kit HWA-202-1, 7 lbs. **32.95**

HW-202 Crystal Certificates

We send certificate to you postpaid. You mail the certificate to the manufacturer and receive the crystals postpaid by return mail.

HWA-202-6, one Transmit Crystal Certificate, postpaid **5.95**

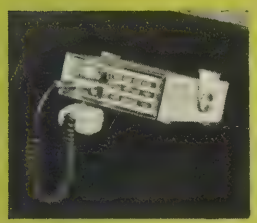
HWA-202-7, one Receive Crystal Certificate, postpaid **5.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

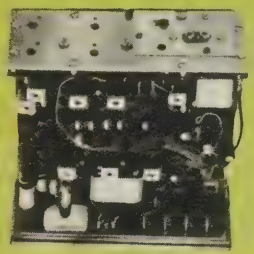
Heathkit 2-meter is your best buy

charg-a-kit

Get on 2 in real style with the famous Heathkit HW-202



Includes gimbal mount for convenient installation. For security, the transceiver is easy to remove — Just unplug 2 cables & unscrew knurled knobs.



Open layout makes the HW-202 easy to build (shown with encoder board installed). Nine adjustments let you align it without special instruments. Requires only a VOM.

Optional Tone-Burst Encoder Shown Installed



Includes Push-to-talk Mike

$179.95

HW-202 SPECIFICATIONS

RECEIVER — Sensitivity: 12 dB SINAD* (or 15 dB of quieting) at .5 μV or less. **Squelch threshold:** 0.3 μV or less. **Audio output:** 3 W at less than 10% total harmonic distortion (THD). **Operating frequency stability:** Better than ±.0015%. **Image rejection:** Greater than 45 dB. **Spurious rejection:** Greater than 60 dB. **IF rejection:** Greater than 80 dB. **First IF frequency:** 10.7 MHz ±2 kHz. **Second IF frequency:** 455 kHz (adjustable). **Receiver bandwidth:** 22 kHz nominal. **De-emphasis:** −6 dB per octave from 300 to 3000 Hz nominal. **Modulation acceptance:** 7.5 kHz minimum. **TRANSMITTER — Power output:** 10 watts minimum. **Spurious output:** Below −45 dB from carrier. **Stability:** Better than ±.0015%. **Oscillator frequency:** 6 MHz, approximately. **Multiplier factor:** X24. **Modulation:** Phase, adjustable 0-7.5 kHz, with instantaneous limiting. **Duty cycle:** 100%. **High VSWR shutdown:** None. **GENERAL — Speaker impedance:** 4 ohms. **Operating frequency range:** 143.9 to 148.3 MHz (will meet specifications ±1 MHz of alignment frequency within this range). **Current consumption:** Receiver (squelched): Less than 200 mA. Transmitter: Less than 2.2 amperes. **Operating temperature range:** −12° to 122°F (−25° to +50°C). **Operating voltage range:** 12.6 to 16.0 VDC (13.8 VDC nominal). **Dimensions:** 2.75″ H x 7.2″ W x 9.875″ D, excluding mount.

Heathkit HW-202 — proven performance and outstanding value

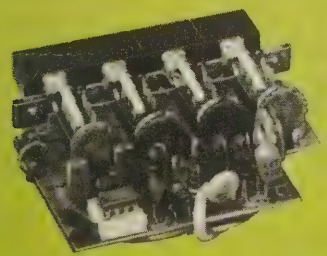
Our HW-202 2-meter transceiver has become an industry standard with a reputation for excellent audio quality. And for the money, we don't think there's a better rig around. Just compare features and specifications.

Operates on any 2 MHz segment of the 143.9 to 148.3 MHz range with independent selection of 6 transmit and 6 receive channels. And all 12 crystals can be netted for optimum performance. The transmitter delivers a solid 10 watts minimum and will operate into an infinite VSWR without failure. Standard narrow band deviation adjustable up to 7.5 kHz with instant limiting.

And the receiver is hot: 0.5 μV signal provides 15 dB of quieting...squelch threshold is 0.3 μV or less. Audio output to the built-in speaker is typically 2 watts at less than 3% harmonic distortion. Diode-protected dual gate MOSFETS in the front end...IC IF that limits at less than 10 μV...dual conversion...monolithic 4-pole 10.7 MHz crystal filter...built-in hash filter/voltage regulator to keep ignition noise out and maintain constant input voltage despite changing car system demand. Kit includes a set of crystals for 146.94 MHz to aid in tune-up and get you on the air quickly...cable for 12 V hook-up...heavy-duty alligator clips for use in a temporary installation. Get on 2 with maximum versatility and lowest cost with the HW-202. And check out the full line of accessories.

Kit HW-202, Shpg. wt. 10 lbs. **179.95**

Tone Burst Encoder allows the HW-202 to access repeaters



Add repeater versatility to your HW-202 **$26.95**

Accesses most closed repeaters for repeater association members, to give your 2-M rig more range and versatility. The four tone select buttons can be pre-set between 1800 Hz and 2500 Hz with bursts adjustable from 0.25 second to continuous. Frequency stability is ±1% from −30 to +50°C. Placing all buttons in "out" position removes encoder from circuit. All components mount on single circuit board which mounts behind the HW-202's removable bezel.

Kit HWA-202-2, Shpg. wt. 1 lb. **26.95**

Quality base and mobile 2-Meter Antennas

[1] **Standard gain mobile 2-M antenna.** ⅝″ wavelength rear deck whip. 3.4 dB gain over ¼-wave vertical. SWR: typically 1.1.1 at resonance. 100 watts, 47″ stainless steel radiator. 17′ RG-58-U coax, connectors.

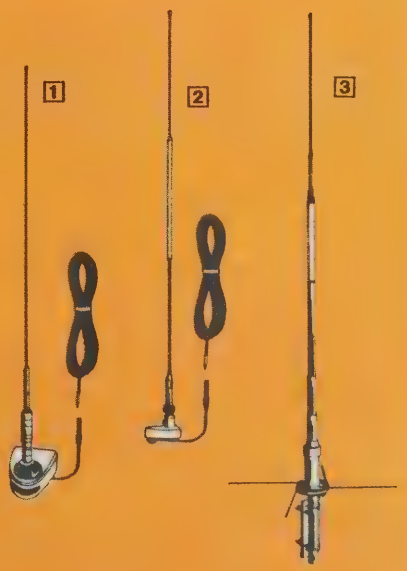
Kit HWA-202-3, Shpg. wt. 2 lbs. **19.95**

[2] **Super gain mobile 2-M colinear antenna.** Phased ¼ and ⅝ wave radiators. 5.2 dB gain over ¼ wave vertical. 180° swivel ball. 200 watts; 6 MHz bandwidth; 1.5:1 or better SWR. Typical SWR at resonance, 1.1:1. Height, antenna & mount, 85″. Removable stainless steel elements. 17′ RG-58-U coax, connectors.

Kit HWA-202-9, Shpg. wt. 3 lbs. **37.95**

[3] **Super gain fixed station 2-M colinear.** 6 dB gain from two ⅝ wave colinear radiators with ¼ wave phasing. 140-150 MHz, field adjustable. 6 MHz bandwidth for 2:1 or better SWR. Resonance SWR, 1.2:1 at antenna. 1000 watts for repeater, fixed station. Shunt fed with DC grounding. SO-239 connector. Alum. vertical element 117″ long, 4 radials; 21″ alum. rod. Wind load, 26 lbs. at 100 mph; wind survival, 100 mph. Mounts to 1¾″ OD vertical pipe. Less coax.

Kit HWA-202-10, Shpg. wt. 7 lbs. **49.95**

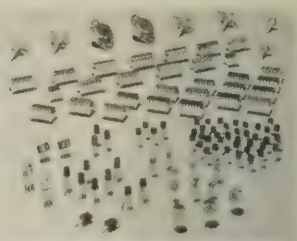


Heathkit 104 series SSB Transceivers...

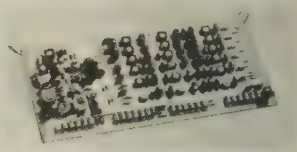


$669.95

HEATH charg-a-kit REVOLVING CHARGE



Completely solid-state design... including the finals. Over 275 solid-state devices, including 31 integrated circuits. Finals are warranted for one year.



Completely broadbanded. Neither the transmitter nor receiver sections require tuning from 3 to 30 MHz...instant QSY!

Heathkit SB-104 Amateur Transceiver

Totally broadbanded, completely solid-state, true digital readout and much more—the standard others will be judged by for years to come. Operates USB, LSB or CW — you can go from CW on the low end of 80 to USB on the high end of 10 in just seconds — and with perfect tune. At last, instant QSY. Choose the band, dial the frequency, select your mode and go — no more preselector, load or tune controls.

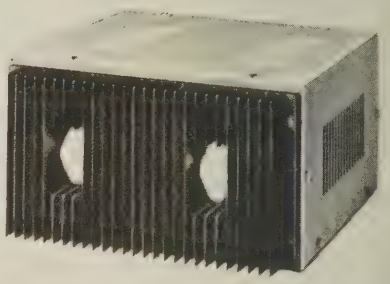
True digital readout with 6 easy-to-read electronic digits provides resolutions down to 100 Hz on all bands. There's no more need to rely on inaccurate dial tracking or questionable VFO linearity. True digital circuitry takes into account all three frequencies: VFO, HFO and BFO. You don't even need a calibrator.

The transmitter delivers 100 watts output, and for QRP'ers, a front-panel switch instantly switches the output to one watt. And the four final transistors are protected against high SWR and thermal runaway, so they should never need replacement. The signal is clean and strong — low harmonic and spurious radiation, third-order distortion down 30 dB or better at 100 watts, carrier and unwanted sideband suppression down —55 dB. We've dramatically reduced cross-modulation and intermodulation to increase useable sensitivity, too. And we didn't forget convenience — 15 MHz WWV position on the bandswitch, 30 kHz per revolution spinner knob, tune button for loading linears, PTT mike jack, pushbutton 100 Hz blanking. ALC/relative power/S-meter, switchable VOX with gain and delay, much more.

Eleven of the 15 boards plug in and seven can be extended out of the chassis while the transceiver is operating. Two wiring harnesses eliminate most point-to-point wiring. Alignment is fast and simple requiring only a dummy load, mike and VTVM. The SB-104 operates directly from a 12V auto electrical system. For fixed station use, hook up the HP-1144 Power Supply.

Kit SB-104, Shpg. wt. 31 lbs. **669.95**
Kit HP-1144, Fixed station power supply, Shpg. wt. 27 lbs. **89.95**
Kit SB-604, Speaker & cab., Shpg. wt. 8 lbs. **29.95**
Kit SBA-104-1, Noise blanker, Shpg. wt. 1 lb. **26.95**
Kit SBA-104-2, Mobile mount, Shpg. wt. 5 lbs. **36.95**
Kit SBA-104-3, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **39.95**

Fixed Station Power Supply



120 V/240 VAC operated supply provides 13.8 VDC required by SB-104 Transceiver. Full-wave bridge circuit has triple Darlington regulation with an integrated circuit which samples, compares, and automatically maintains a fixed voltage. Output is remotely sampled at the load end of the power cable, compensating for voltage drop across fuse and cable, to provide almost no change in voltage from no load to full load. Entire unit mounts within SB-604 speaker cabinet.

Kit HP-1144, Shpg. wt. 27 lbs. **89.95**

HP-1144 SPECIFICATIONS

Output Voltage: 13.8 VDC regulated (Adjustable from approximately 11 to 16 VDC). **Maximum Output Current:** 20 amperes, intermittent. 8 amps continuous. **Power Requirement:** 110 to 130 VAC @ 6A or 220 to 260 VAC @ 3A, 50/60 Hz maximum. **Dimensions:** 5½" H x 9¼" W x 10¼" D. **Regulation:** Less than 2% output voltage variation from no load to 20 amperes. **Ripple:** Less than 1% at 20 amperes. **Fuses:** 7-amp, 3AG, slow-blow primary. 20-amp, 3AG, output. **Net Weight:** 23 lbs.

SB-604 Station Speaker (Not Shown)

Designed and styled to match the SB-104 Transceiver, the cabinet is large enough to house the HP-1144 AC Power Supply. The 5" x 7", 3.2 ohm speaker is response-tailored for SSB. Connector cable & plug are included.

Kit SB-604, Shpg. wt. 8 lbs. **29.95**

SB-604 SPECIFICATIONS

Speaker Size: 5" x 7" oval. **Voice Coil Impedance:** 3.2 ohms. **Frequency Response:** 300 to 3000 Hz. **Magnet Weight:** 3.16 oz. **Cabinet:** Aluminum with gray wrinkle finish. **Dimensions:** 7⅛" H x 10⅛" W x 14" D.

SB-104 SPECIFICATIONS

TRANSCEIVER SECTION — GENERAL OPERATION: Frequency Coverage: 3.5 MHz through 29.7 MHz amateur bands, 15 MHz WWV receive only. **Frequency Stability:** Less than 100 Hz/hr drift after 30-min. warmup; less than 100 Hz drift for ±10% change in primary voltage. **Readout Accuracy:** Within ±200 Hz ±1 count. **Audio Frequency Response:** 350 to 2450 Hz ±75 Hz (6 dB bandwidth). **Dial Backlash:** 50 Hz max. **Phone Patch Impedance:** 4 ohm output to speaker; high impedance output to transmitter. **TRANSMITTER: RF Power Output: High Power** (50 ohm non-reactive load). SSB: 100 watts PEP ±1 dB; CW: 100 watts ±1 dB. **Low Power** SSB: 1 watt PEP (minimum); CW: 1 watt (minimum). **Output Impedance:** 50 ohms, less than 2:1 SWR. **Carrier Suppression and Unwanted Sideband Suppression:** 55 Db down from 100 watt single-tone output at 1000 Hz reference. **Harmonic Radiation:** 45 dB below 100 watt output. **Spurious Radiation:** —50 dB within ±3 MHz of carrier; —60 dB farther than ±3 MHz from carrier, except —40 dB at 3.39 MHz on 80 meter band. **Microphone Input:** High impedance with a rating of —45 to —55 dB; approx. 25K ohms. **RECEIVER—Sensitivity:** Typically 0.6 μV (1 μV max.) for 10 dB S+N/N for SSB operation. **Selectivity:** 2.1 kHz minimum at 6 dB down, 5 kHz maximum at 60 dB down. (2:1 nominal shape factor). **CW Selectivity:** (with accessory CW filter) 400 Hz at 6 dB down; 2 kHz max. at 60 dB down. **Audio Output:** 2.5 watts into 4 ohms, 1.25 watts into 8 ohms, at less than 10% THD. Low impedance headphones (4-8 ohm). **AGC:** Less than 1 millisecond attack time; switch selectable 100 msec. and 1 sec. release, and OFF. **IM Distortion:** —65 dB min.; typically —57 dB with noise blanker. **Image Rejection:** —60 dB min. **IF Rejection:** —60 dB min. **Internally Generated Spurious:** Below 2 microvolt equivalent antenna input, except at 3.65, 3.74, 14.24 MHz and 21.2 MHz. **Dimensions:** 5¾" H x 14 15/32" W x 13⅞" D. (Less knobs, feet and connectors). **Weight:** 20 lbs.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Digital or Dial, Your BEST for the money!



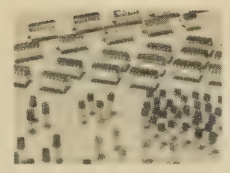
Now more hams than ever can afford broadband design thanks to the Heathkit HW-104 Transceiver

Instant QSY! Choose the band, frequency and mode and it stays tuned anywhere — without preselector, load or tune controls. Transmission is clean from 100 watts through one, with low harmonic and spurious radiation. At 100 watts third order distortion is down 30 dB and carrier and unwanted sideband suppression are down 55 dB. Reception is super clear thanks to a broadband design that minimizes cross-modulation and intermodulation. Active devices are minimized ahead of the 4-pole crystal filter. Adjacent signal overload is minimized too. Yet, sensitivity is less than 1 μV. And for convenience, there's a 15 MHz WWV receive position on the band switch and a "pull-to-calibrate" position on the RF control.

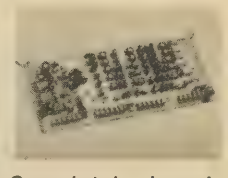
The smooth action dial covers 3.5 MHz to 29.0 MHz with 15 kHz per knob revolution. A built-in 100 kHz and 25 kHz calibrator insures dial accuracy to within 2 kHz (markings in 5 kHz increments). The VFO is the same basic circuitry as the SB-104 with less than 100 Hz/hr. drift after warmup. Want the top MHz of 10 meters? Add the HWA-104-1 accessory.

Assembly is clean and precise, too. All you need for alignment is a dummy load, microphone and VTVM. And you can add the matching SB-614 Station Monitor and SB-634 Console to your HW-101 rig. For fixed station use, order HP-1144 supply.

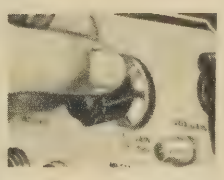
Kit HW-104, Shpg. wt. 29 lbs. **539.95**
Kit HP-1144, AC power supply, Shpg. wt. 27 lbs. **89.95**
Matching speaker. (Shown above.)
Kit HS-1661, Shpg. wt. 5 lbs. **19.95**
10-meter accessory, coverage to 29.7 MHz.
Kit HWA-104-1, Shpg. wt. 1 lb. **16.95**
SBA-104-1, Noise blanker. Shpg. wt. 1 lb. **26.95**
SBA-104-2, Mobile mount, Shpg. wt. 5 lbs. **36.95**
SBA-104-3, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **39.95**



All solid-state...including the finals. Output warranted for one year.



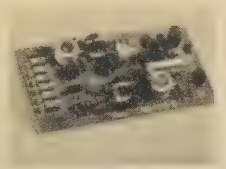
Completely broadbanded. No tuning from 3 to 30 MHz... instant QSY.



Built-in 100 kHz & 25 kHz calibrator. Keeps your dial scale accurate to 2 kHz.



Circuit board construction. Seven major boards can be extended for adjustment.



Optional noise blanker for up to 50 dB of effective blanking.



Complete back-panel connections. Access in & out to everything.

HW-104 SPECIFICATIONS

Frequency Coverage: 3.5 MHz through 29.0 MHz amateur bands, (through 29.7 MHz, with HWA-104-1 accessory). **Frequency Stability:** less than 100 Hz/hour drift after 30-min. warmup; less than 100 Hz drift for ±10% change in primary voltage. **Modes of Operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial Accuracy:** Within 2 kHz after calibration at nearest 100 kHz marker. Built-in calibrator provides 100 kHz and 25 kHz markers. 5 kHz dial markings. Approximately 15 kHz per turn. **Audio Frequency Response:** 350 to 2450 Hz ±75 Hz (6 dB bandwidth). **Tuning Backlash:** 50 Hz or less. **Phone Patch Impedance:** 4Ω output to speaker; high impedance output to transmitter. **Power Requirements:** 13.8 VDC nominal (maximum 16 VDC) at: Receive: 2 amps. Transmit, low power: 3 amps. Transmit, high power: 20 amps. **TRANSMITTER — RF Power Output: High Power** (50Ω nonreactive load). SSB: 100 watts PEP ±1 dB, CW: 100 watts ±1 dB. **Low Power:** SSB: 1 watt PEP (minimum), CW. 1 watt (minimum). **Output Impedance:** 50 ohms, less than 2:1 SWR. **Carrier Suspension:** 55 dB down from 100 watt single-tone output at 1000 Hz reference. **Unwanted Sideband Suppression:** 55 dB down from 100 watt single-tone output at 1000 Hz reference. **Harmonic Radiation:** 45 dB below 100 watt output. **Spurious Radiation:** —50 dB within ±3 MHz of carrier, except, on the 3.5 band, —40 at 3.395 MHz. —60 dB greater than ±3 MHz from carrier. **Third Order Distortion:** 30 dB down from two-tone output, reference at 100 watts PEP. **Transmit/Receive Operation:** SSB: PTT or Vox. CW: Keyed-tone Vox or Manual. **NOTE:** In the low power mode all transmit-receive switching is solid-state. **CW Sidetone:** Internally switched to speaker or headphones in CW mode. Approximately 700 Hz tone. **Microphone Input:** High impedance with a rating of —45 to —55 dB. **RECEIVER Sensitivity:** Typically 0.6 μV (1 μV max.) for 10 dB S+N/N for SSB operation. **Selectivity:** 2.1 kHz min. at 6 dB down, 7 kHz max. at 60 dB down. **CW Selectivity (with accessory CW filter):** 400 Hz at 6 dB down, 2 kHz at 60 dB down. **Overall Gain:** Less than 1 microvolt for 0.5 watt audio output. **Audio Output:** 2.5 watts into 4 ohms, 1.25 watts into 8 ohms, at less than 10% THD. **AGC:** Less than 1 millisecond attack time; switch selectable 100 μsec and 1 S release, and OFF. **Intermodulation Distortion:** —60 dB. **Image Rejection:** —60 dB. **IF/IM Rejection:** —60 dB. **Internally Generated Spurious Signals:** Below 2 μV equivalent antenna input, except at 3.65, 3.74, 14.25, and 21.2 MHz. **Dimensions:** (less knobs, feet, sockets, rails) 5¾" H x 14$^{15}/_{32}$" W x 13⅞" D (14.6 cm. x 36.75 cm. x 35.24 cm.). **Net Weight:** 20 lbs. (7 kg.)

Informative Radio Books



Single-Sideband: Theory and Practice — a one-source guide emphasizing basic principles & circuitry rather than math.
EDP-120 .....**6.95**

Radio Handbook — the standard work on practical & theoretical aspects of radio communications and electronics.
EDP-117 .....**19.50**

See page 48 for book ordering information.

Versatile Station Accessories for the 104's



$139.95

SB-614 Transmit Signal Station Monitor

Make sure your signal is in top shape!
WATCH IT on the 614's highly visible 1½x2" CRT

For use with 104 series, many other SSB Transceivers. Monitors transmitted SSB, CW and AM signals up to 1 kW from 80-6 meters. Its sharp, clean trace indicates a variety of common operating problems: non-linearity, insufficient or excessive drive, poor carrier or sideband suppression, regeneration, parasitics and key clicks. Features all standard scope controls, recurrent automatic sync-type sweep generator, front panel 11-step attenuator control. Has rear panel Astigmatism control, horizontal and vertical inputs and outputs, exciter and linear inputs/outputs. Solid-state circuit, easy to build circuit board/wiring harness design.

Kit SB-614, Shpg. wt. 17 lbs. **139.95**

SB-614 SPECIFICATIONS

RF SAMPLING SECTION: Power Limits: Exciter input (50 — 75 ohm) 10 to 300 watts: Antenna input (50 — 75 ohm) 10 to 1000 watts. **Insertion Loss:** Negligible. **VERTICAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 75 pf. **Sensitivity:** 60 mV rms/¼" vertical deflection. **Attenuator:** 2 position; x1, 2 volts rms max. input; x10, 20 volts rms max. input. **HORIZONTAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 50 pf. **Sensitivity:** 50 mV rms/¼" horizontal deflection. **SWEEP GENERATION: Type:** Recurrent, automatic sync. **Frequency Range:** 10 Hz to 10 KHz in three ranges. **GENERAL: Graticule:** .250 inch squares 6 x 8 (1.5 x 2.0 inches total viewing area). **Power Requirement:** 110-130 or 220-260 VAC, 60/50 Hz. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 12 lbs.



$179.95

SB-634 Five-Function Station Console

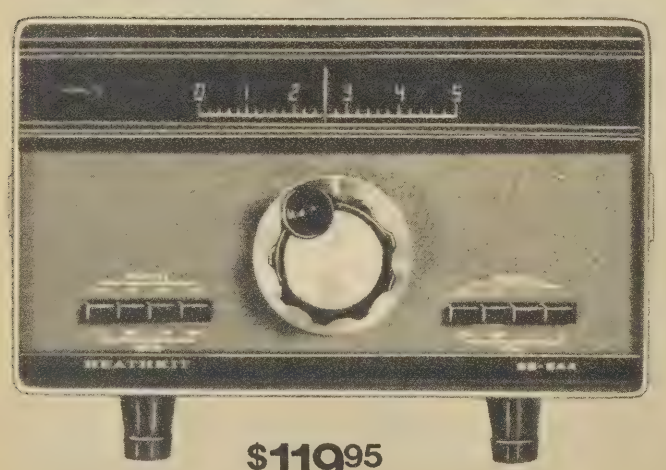
Provides the five station functions every Amateur needs— Clock, Timer, Wattmeter, SWR Bridge and Phone Patch

It's five different instruments in a single, compact and stylish "SB"-type case! The 24-hour digital clock is independent of all other functions. The 10-minute ID timer indicates to 9.59, then recycles with either a visual or audible alarm. The RF wattmeter measures 200 or 2000 watts full scale with ±10% accuracy from 160 to 10 meters. The SWR meter has a separate sensitivity control. The phone patch can be used manually or with VOX control. Add real operating versatility to your 104 station today!

Kit SB-634, Shpg. wt. 14 lbs. **179.95**

SB-634 SPECIFICATIONS

CLOCK — Display: Six digits. **Time Base:** 24 hours. **TIMER — Display:** Three full digits. **Time Interval:** 10 minutes with automatic reset. Manual reset at any portion of 10-minute period. **Signal:** Visual only or both visual and aural. **RF POWER/SWR METER — Frequency Range:** 1.8 to 30 MHz. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Handling Capability:** 2000 watts (maximum). **SWR Sensitivity:** Less than 10 watts. **Impedance:** 50 ohm nominal. **Connectors:** UHF type SO-239. **PHONE PATCH — Circuit:** Telephone hybrid for VOX or manual operation. **TELEPHONE LINES — Input Impedance:** Approximately 600 ohm. **Null Depth:** At least 30 dB isolation between transmit and receive circuits. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 10 lbs.



$119.95

SB-644 Transmit/Receive Remote VFO

Designed exclusively for use with the SB-104. Provides split transmit/receive capability without a separate transmitter and receiver. Multimode capability allows transceive operation on either the "644" or the "104." Use either of the two crystal positions in the "644" for fixed-frequency control. Convenient front panel controls for all transceive, transmit or receive modes on both the "104" and the remote VFO. "644" tuning scale gets you into the right frequency area, exact frequency readout takes place in the "104." Switch from transmit to receive and the display automatically changes to the correct frequency. The "644" uses the same kit VFO as the SB-104. And the true digital frequency readout in the "104" eliminates concern about dial VFO linearity problems. "644" assembles easily, with minimal adjustments, and requires no modifications to "104".

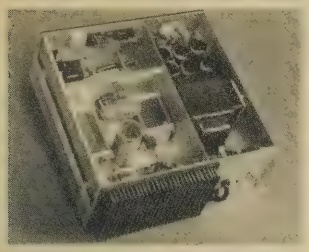
Kit SB-644, Shpg. wt. 10 lbs. **119.95**

SB-644 SPECIFICATIONS

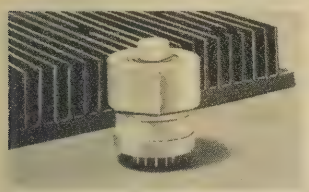
Frequency Coverage: 5.0 — 5.5 MHz allowing 80, 40, 20, 15, 10 meter operation in the SB-104. **Frequency Stability:** Less than 100 Hz drift per hour after thirty minute warmup. **Modes of Operation:** Remote VFO; Main VFO; Receive Remote/Transmit Main; Receive Main/Transmit Remote; Crystal frequencies (2) (crystals not supplied). **Dial Backlash:** 100 Hz max. **Power Requirements:** 11V and 13.6V at 500 mA from SB-104. **RF Output:** 0.34 to 0.4V RMS over 5 to 5.5 MHz into a 50 ohm load. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 6½ lbs.

Charge a kit — no money down on any kit — see page 50 for details.

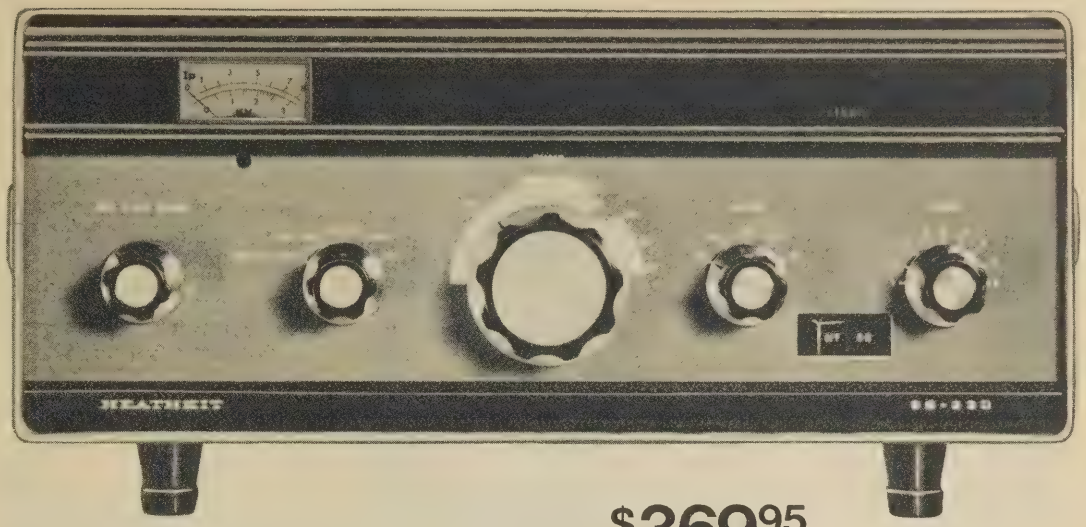
Heathkit Linears—Packed with Power and Features



Chassis of the SB-230.



The business end of the SB-230 — a conduction-cooled triode final and efficient heat sink. No blower needed.



SB-230 1kW Conduction-Cooled Linear $369.95

The lowest cost conduction-cooled linear on the market. Uses a husky Eimac 8873 triode in proven, stable, grounded grid circuitry to deliver up to 1200 watts PEP SSB, 1000 watts CW input from less than 100 watts drive. It's also rated at 400 watts input for slow-scan TV and RTTY. And the final is completely enclosed in a double-shielded compartment. Bandswitching is done with a single knob...Load and Tune controls are clearly marked so you can return to a favorite operating frequency just by noting the control positions. A five-position switch, coupled with the back-lighted meter, indicates Relative Power, Plate current, Grid current and plate High Voltage at a glance. Relative Power sensitivity is adjustable with the front panel knob.

Built-in safety features include microswitch interlocks on both the top and bottom to shut down primary power when cabinet shells are removed; a temperature monitored heat sink that shuts down the unit if temperature goes too high. Built-in delay circuit allows sufficient tube warmup. An Exciter light indicates the linear is running straight through, without amplification. The On-Off switch includes a circuit breaker for the primary side of the power transformer. And the cathode of the tube is fused.

Kit SB-230, Shpg. wt. 40 lbs. **369.95**

SB-230 SPECIFICATIONS

Band Coverage: 80, 40, 20, 15 and 10 meter. **Duty Cycle: SSB:** continuous voice modulation; **CW:** continuous (max. key-down time 30 seconds); **RTTY/SSTV:** 50% (max. transmit time 10 minutes at 400 watts). **Driving Power Required:** less than 100 W. **Third Order Distortion:** —30 dB or better. **Output Impedance:** 50 ohms at 2:1 SWR max. **Input Impedance:** 52 ohms at 1.5:1 SWR max. **Zero Signal Plate Current:** 25 mA. **Power Requirement:** 120 VAC, 50/60 Hz, 14 A max. or 240 VAC, 50/60 Hz, 7 A max. **Dimensions:** 14¾" W x 16" D x 7" H. **Net Weight:** 33½ lbs.

Heathkit SB-200 Amp has a 1 kW kick

Delivers a full 1200 W PEP SSB input, 1 kW on CW. Features include: Solid-state power supply with circuit breaker protection, metering for SWR, grid current, plate current, relative power, plate voltage. Pretuned cathode input circuit for maximum efficiency and low distortion. Clean, open layout makes assembly extra easy.

Kit SB-200, Shpg. wt. 50 lbs. **329.95**

SB-200 SPECIFICATIONS

Band coverage: 80, 40, 20, 15 & 10 meters. **Maximum power input:** 1200 W P.E.P. SSB, 1000 W CW. **Driving power required:** 100 W. **Duty cycle:** SSB, continuous voice modulation; CW 50% (key down time not to exceed 5 min.). **Third order distortion:** 30 dB or better at 1000 W P.E.P. **Output impedance:** 50-75 ohm unbalanced; variable pi-output circuit. **SWR:** not to exceed 2:1. **Input impedance:** 52 ohm unbalanced; broadband pretuned input circuit requires no tuning. **Front panel controls:** Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. **Tube complement:** Two 572B/T-160-L (in parallel). **Power requirements:** 120 VAC @ 16 A (max.), 240 VAC @ 8 A (max.). **Cabinet size:** 6⅝" H x 14⅞" W x 13⅜" D.



$329.95

charg-a-kit

2 kW powerhouse—the Heathkit SB-220

The one that made history because it offered more features and performance for the price! A pair of Eimac 3-500Zs in grounded grid deliver up to 2 kW PEP SSB input...a full 1 kW on CW and RTTY. Requires just 100 W drive for full output. Pretuned broadband pi-input provides maximum efficiency and minimum distortion from 80—10 meters. Features include a husky built-in solid-state supply that can be wired for either 120 or 240 VAC...built-in circuit breaker protection...Zener diode regulated operating bias to reduce idle I_p for cool running, longer tube life...fan cooled, well-shielded final compartment...complete metering facilities.

Kit SB-220, Shpg. wt. 70 lbs. **469.95**

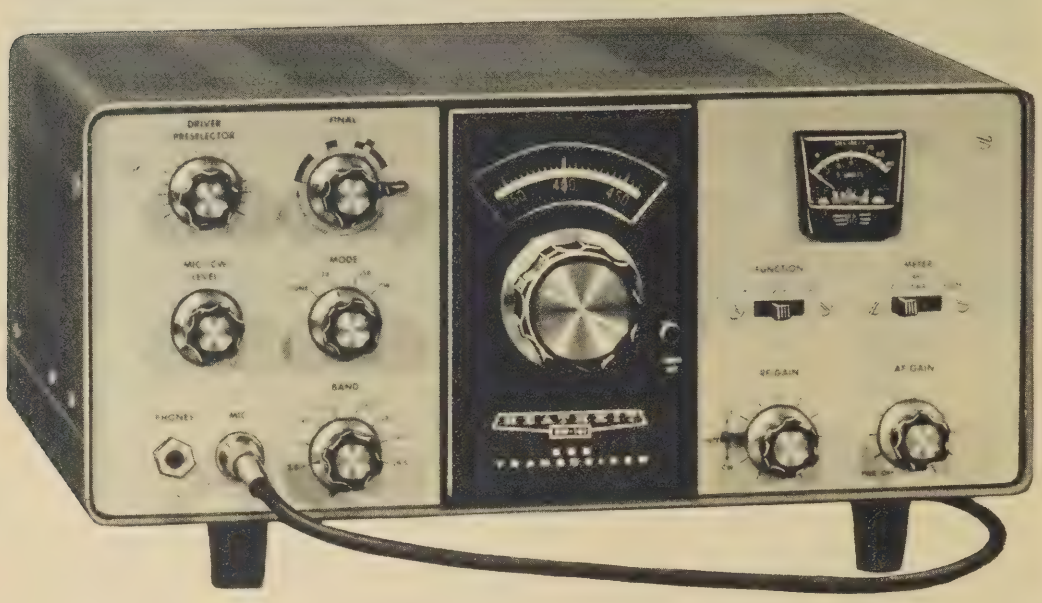
SB-220 SPECIFICATIONS

Band coverage: 80, 40, 20, 15 and 10 meters. **Duty cycle:** SSB, Continuous voice modulation. CW, Continuous (maximum key-down 10 minutes). RTTY, 50% (maximum transit time 10 minutes). **Third order distortion:** —30 dB or better: **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity, Meter Switch, Power CW/Tune — SSB, Plate meter, Multi-meter. **Rear panel:** Line cord, circuit breakers (two 10 A). Antenna Relay (phono). ALC (phono). RF Input (SO 239). Ground post. RF Output (SO-239). **Power required:** 120 VAC, 50/60 Hz at 20 amp. max. 240 VAC, 60/50 Hz at 10 amp. max. **Cabinet size:** 8¼" H x 14⅞" W x 14½"D.



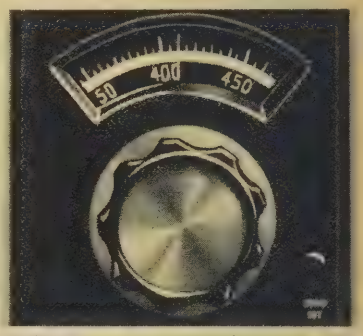
$469.95

Our world-famous HW-101 SSB Transceiver





Versatile front panel meter shows signal strength on receive, ALC voltage on transmit, switches to read relative power output or final amplifier cathode current.



Built-in crystal calibrator lets you accurately calibrate the dial at 100 kHz intervals. Extra-large tuning knob for smooth, backlash-free tuning.

HEATH charg-a-kit REVOLVING CHARGE

Heathkit HW-101 5-Band Transceiver

$339.95 ***Its price/performance ratio makes the HW-101 an exceptional value in amateur radio***

Hybrid design, full featured. 20 tubes and 19 semiconductors are combined with the features you need for operating ease, convenience and versatility. 180 watts input PEP, 170 watts input CW; 0.35 μV sensitivity; FET VFO; PTT and VOX with anti-trip; triple action level control; smooth dial drive with 36-to-1 ratio; built-in 100 kHz calibrator; 4-function meter for receive, ALC on transmit, relative power output, or final cathode current; all going for you on USB, LSB, or CW on 80 through 10.

Easy to build. Open chassis layout with uncrowded circuit boards, wiring harness, and special "Switch Boards" with built-in wafer switches to help eliminate intricate switch wiring make it happen fast and easy. Build it...join the thousands of hams who've found you can't beat it.

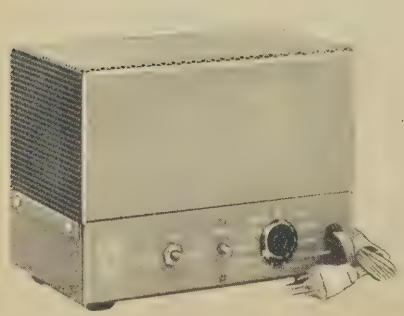
Kit HW-101, Shpg. wt. 21 lbs. **339.95**

SBA-301-2, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **29.95**

HW-101 SPECIFICATIONS

RECEIVER: Sensitivity: <0.35 μV for 10 dB S+N/N for SSB operation. **SSB selectivity:** 2.1 kHz min. @ 6 dB down; 7 kHz max. @ 60 dB down (3.395 MHz filter). **CW selectivity:** (optional SBA-301-2 CW crystal filter); 400 Hz min. @ 6 dB down; 2.0 kHz max. @ 60 dB down. **Input:** Low impedance for unbalanced coaxial input. **Output impedance:** 8 ohm speaker, and high impedance headphone. **Power output:** 2 watts with <10% distortion. **Spurious response:** Image and IF rejection >50 db. **TRANSMITTER: DC power input:** SSB 180 watt PEP (normal voice, continuous duty cycle). CW 170 watts (50% duty cycle). **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohm to 75 ohm with <2:1 SWR. **Oscillator feedthrough or mixer products:** 55 dB below rated output. **Harmonic radiation:** 45 dB below rated output. **Transmit-receive operation:** SSB: PTT or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. **CW sidetone:** Internally switched to speaker or headphone in CW mode. Approx. 1000 Hz tone. **Microphone input:** High impedance with a rating of −45 to −55 dB. **Carrier suppression:** 45 dB down from single-tone output. **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB from two-tone output. **RF compression (TALC*):** >10 dB at .1 mA final grid current. **GENERAL: Frequency coverage:** 80-10 M amateur bands. **Frequency stability:** <100 hertz per hour drift after 45 minutes warmup from normal ambient conditions. <100 Hz for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial calibration:** 5 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz. **Power requirements:** 700 to 850 volts at 250 mA with .1% maximum ripple; 300 volts at 150 mA with .05% maximum ripple; −115 volts at 10 mA with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. (see fixed & mobile power supplies below). **Cabinet dimensions:** 6⅜" H x 14⅞" W x 13⅜" D.

*Triple Action Level Control.



Heathkit HP-23B Fixed Station Power Supply

$57.95 ***For Use with HW-101 Above, Other Heathkit SSB Transceivers, Many Other Transceivers***

Provides the operating voltages needed for fixed station transceiver use — high voltage, two low voltages, fixed bias, 12.6 volt filament. The improved HP-23B now features a higher voltage rating on B+ filter capacitors; improved filtering on bias voltage; fixed bias voltage, and heavier filament wires in the power cable. Now the popular Heathkit power supply is better than ever.

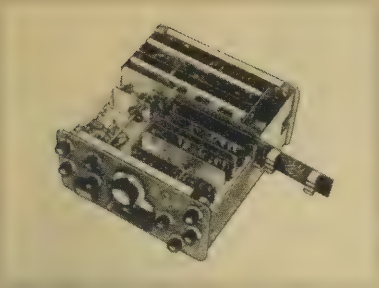
Kit HP-23B, Shpg. wt. 19 lbs. **57.95**

HP-23B SPECIFICATIONS

Power requirements: 120/240 VAC, 60/50 Hz, 350 watts maximum. **High voltage output:** 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple. Less than 1% @ 250 mA. Duty cycle: 150 mA continuous to 300 mA @ 50%. **Low voltage output:** (High tap) 350 VDC, no load; 300 VDC @ 150 mA ±10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA; ±10%. Less than .05% AC ripple @ 150 mA, continuous duty to 175 mA. **Fixed bias:** −130 VDC ±10%, no load; −100 VDC @ 20 mA. **Filament voltage:** 12.6 VDC @ 5.5 amps. **Dimensions:** 9" L x 4¾" W x 6¾" H.

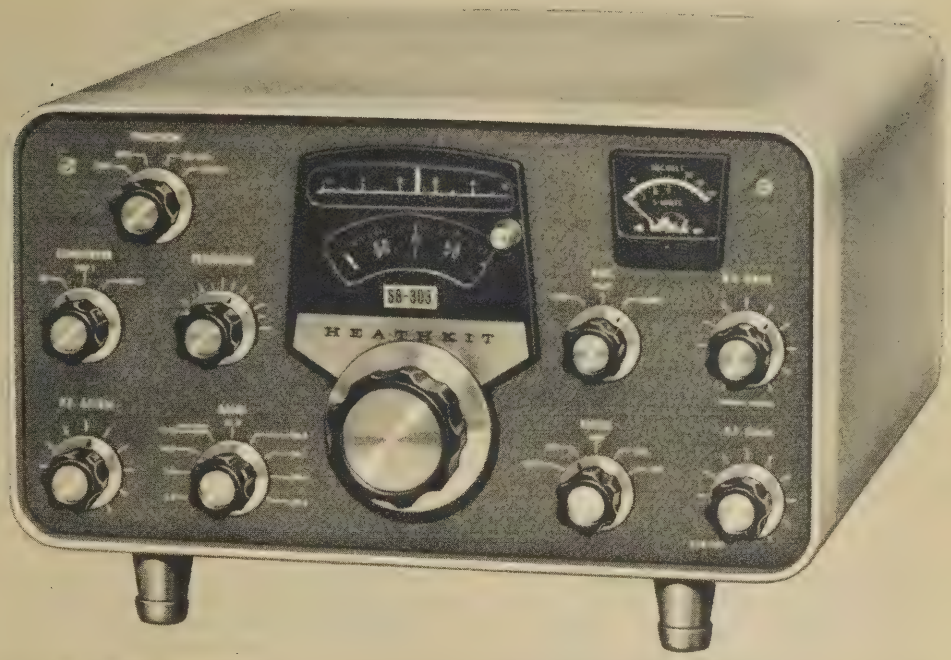
Charge a kit — no money down on any kit — see page 50 for details.

Hear it ALL with the Super SB-303



Special extender board lets you make voltage checks easily even while the receiver is operating.

Last Call!



Heathkit SB-303 World-wide SSB Transceiver

$389.95 ***Solid-state circuitry provides the reliability you need for day-in, day-out operating***

80 through 10, SSB, CW, RTTY, and AM...the world over...all at your fingertips in this solid-state wonder of stability, selectivity, and sensitivity. The preassembled, prealigned solid-state LMO and crystal controlled heterodyne oscillators assure stable and linear tuning with a calibrated dial readout in 1 kHz increments and 100 Hz stability. Calibrate it with its built-in dual frequency integrated circuit crystal calibrator with markers for every 100 kHz or 25 kHz...or tune to WWV at 15 MHz. It has a 0.25 microvolt sensitivity and 2.1 kHz SSB selectivity to keep you going even when the band isn't, and an RF attenuator to use when it is. Three-position AGC, too, to make SSB operating easier. Solid-state circuitry has 28 silicon transistors including 4 MOSFETS and an IC plus a transistor-regulated dual-primary power supply.

Easier-than-ever assembly with modular plug-in Switch-Boards and circuit boards, plus extender boards for easier adjustment...all you need for alignment is an 11-megohm VTVM.

Kit SB-303, Shpg. wt. 22 lbs. **389.95**

SBA-301-1, Optional 3.75 kHz AM crystal filter, Shpg. wt. 1 lb. **24.95**

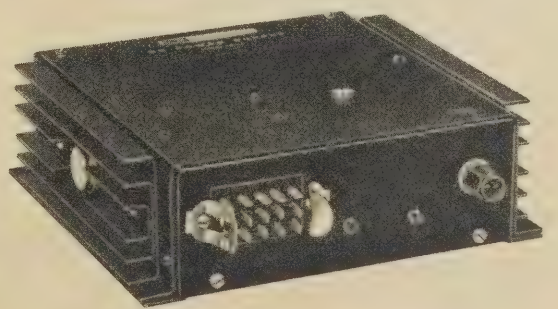
SBA-301-2, Optional 400 Hz CW crystal filter, Shpg. wt. 1 lb. **29.95**

SB-303 SPECIFICATIONS

Frequency range: 18-10 M amateur bands; 15 MHz WWV. **Intermediate frequency (IF):** 3.395 MHz. **Frequency stability:** <100 Hz drift/hr. after 10 min. warmup <100 Hz drift for ±10% line voltage variation. **Modes of operation:** SSB, CW, AM, RTTY. **Sensitivity:** <0.25 μV for 10 dB S+N/N for SSB operation. **Overall gain:** <1.5 μV input for 0.5 W audio output (single tone SSB). **AGC characteristics:** Blocking —>3.0 V CW/SSB/RTTY. Dynamic Range —>150 dB CW/SSB. RF Attenuator — variable 0.40 dB nominal. **Selectivity:** SSB — 2.1 kHz @ 6 dB down, 5.0 kHz max. @ 60 dB down (crystal filter supplied). CW — 400 Hz @ 6 dB down, 2.0 kHz max. @ 60 dB down (accessory CW crystal filter). AM — 3.75 kHz @ 6 dB down, 10 kHz max. @ 60 dB down (accessory AM crystal filter). RTTY — 2.1 kHz @ 6 dB down, 5.0 kHz max. @ 60 dB down (uses SSB crystal filter). **Image rejection:** >60 dB. **IF rejection:** 3.395 — >55 dB. 8.595 — >50 dB. **Spurious response:** All below 1 μV equivalent signal input. **Temperature ranges:** 10°C-50°C ambient. **Dial accuracy:** Electrical — Within 400 Hz after calibration at nearest 100 kHz or 25 kHz point. Visual — Within 200 Hz. **Calibration:** Every 100 kHz or 25 kHz. **Dial accuracy:** No more than 50 Hz. **Antenna input impedance:** 50 ohm nominal unbalanced. **Audio response:** SSB — 350-2420 Hz nominal @ 6 dB. CW (with accessory filter) — 800-1200 Hz nominal @ 6 dB. AM (with accessory filter) — 200-3500 Hz nominal @ 6 dB. RTTY — 1840-3940 Hz nominal @ 6 dB. **Audio output impedance:** Speaker — 8 ohm: Headphones — Low impedance. **Audio output power:** 4 W <10% distortion. **Muting:** Open external ground at mute socket. **Power requirements:** 120/240 VAC, 40 W max. **Cabinet dimensions:** 6⅝" H x 12¼" W x 13" D. **Overall dimensions** (with knobs & feet installed): 7 15/16" H x 12¼" W x 14" D.

Heathkit HP-13B Mobile Power Supply

$84.95 ***For mobile operation of all Heathkit SSB transceivers, other brands as well***



Supplies all the necessary operating voltages for mobile use of SSB transceivers — high, low and fixed bias voltages, also switches filament voltage for equipment with which it is used. Features relay control of all primary power, individual circuit breaker protection of DC input and filament voltage line. Silicon rectifiers, heavy-duty capacitors and rugged circuit board mounting assure long life and reliable operation.

Kit HP-13B, Shpg. wt. 7 lbs. **84.95**

HP-13B SPECIFICATIONS

Input voltage: 12 to 16 VDC (neg. ground only). **Input current:** 25 amp. max. full load. **High voltage output:** 800 VDC, no load: 750 volts DC @ 250 mA. AC ripple: less than 1% @ 250 mA. **Low voltage output:** (high tap) 310 VDC, no load; 200 VDC @ 150 mA. (low tap) 265 VDC, no load; 250 VDC @ 150 mA. AC ripple: Less than .05% @ 150 mA. **Fixed bias:** —130 VDC @ 20 mA. **Dimensions:** 7¾" W x 7 5/16" L x 2⅜" D. All voltages referenced at 13 VDC.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Code is more fun than ever with these



$139.95



One of the world's most popular CW Transceivers — the Heathkit HW-16

- ***50-90 Watts Adjustable Input***
- ***Better than 1 μV Sensitivity***
- ***True break-in capability***

Easily one of the most popular Novice Transceivers in the industry, and for those who stay on the CW bands even after they obtain their general license — the Heathkit HW-16 remains a favorite. For many Hams, it was a used HW-16 that first put them on the air. It's a rare Amateur that hasn't operated one once in his career.

The HW-16 is designed primarily for the Novice operator, but its fine performance and capabilities make it ideal for General ticket ops too. It's equally at home in the Shack of Novice or Pro.

Why is the HW-16 so popular? The features speak for themselves. The Heathkit HW-16 offers optimum CW operation on the first 250 kHz of the 80, 40 and 15 meter bands. The transmitter is crystal controlled for excellent stability . . . features true break-in capability with solid-state T/R switching . . . 75 watts input for Novices, up to 90 watts for General and above. All stages of the transmitter are grid block keyed for clean code signals.

Receiver uses dual conversion for excellent image rejection. The front end is crystal-controlled for excellent stability, and a 500 Hz crystal filter provides outstanding selectivity. Receiver is automatically muted each time the key is depressed for full break-in operation. Sensitivity is better than 1 μV for crisp, clean copy.

Has front panel Relative Power and Plate Current meter, RF gain and power level controls, AF gain, tune and Band controls. The clearly marked tuning dial allows fast, accurate frequency selection. VFO input lets you add the HG-10B (below) for complete VFO transmit and receive capability.

Kit construction is easy and enjoyable. The famous Heathkit manual guides you every step of the way with step-by-step instructions and easy to follow illustrations. Final assembly and checkout requires only a VTVM, dummy load, code key and appropriate crystals. In addition to its fine CW performance, the HW-16 is a great kit project, even for first time builders.

Kit HW-16, Shpg. wt. 24 lbs. **139.95**

HW-16 SPECIFICATIONS

TRANSMITTER SECTION:

RF Power Input: 50-90 W (adjustable).

Frequency Control: 80 meter crystal or VFO on 80-meter band. 80- or 40-meter crystal, or VFO on 40-meter band. 40-meter crystal or VFO on 15-meter band.

Keying: Grid-block. Break-in with automatic antenna switching and receiver muting.

Output Impedance: 50 ohm unbalanced. SWR less than 2:1.

Sidetone: Neon lamp relaxation oscillator.

RECEIVER SECTION:

Sensitivity: less than 1 μV for 10 dB S+N/N.

Selectivity: 500 Hz at 6 dB down.

Intermediate Frequency: 3396 kHz.

Antenna Impedance: 50 ohm, unbalanced.

External Speaker Impedance: 8 ohm.

GENERAL:

Frequency Coverage: 3.5 to 3.75 MHz. 7.0 to 7.25 MHz. 21.0 to 21.25 MHz.

Power: 120 VAC, 50-60 Hz.

Dimensions: 6½" H x 13¾" W x 11½" D.



$69.95

Heathkit HG-10B 80-2 Meter VFO

- ***Provides VFO operation on 80-10 meters***
- ***For all grid-block-keyed transmitters***

Ideal for operation with the Heathkit HW-16 above or DX 60B (next page). Also can be used with many other Amateur transmitters capable of providing operating voltages and having a VFO input.

Provides VFO control from 80 through 2 meters with separate calibrated scales for each band. Continuously variable vernier tuning (28:1 ratio) permits accurate tuning within each band. Uses multiples of VFO output frequency on 20 through 2 meters, output frequency is used directly on 80 and 40 meters.

Special temperature compensated components in the oscillator circuit, along with regulated B+ voltage, provide stable, drift-free operation. Output voltage is 5 V rms at 3.4-4, 7-7.425 and 8-9 MHz range.

The HG-10B is compatible with virtually all grid-block-keyed transmitters. Alignment requires receiver of known accuracy covering 80-2 meter bands or 3.5 to 8.222 MHz.

Kit HG-10B, Shpg. wt. 11 lbs. **69.95**

HG-10B SPECIFICATIONS

Band Coverage: 80-2 meters. Load Impedance: 50,000 ohms or more. Output voltage: 5 V rms, open circuit. Output Connector: phono type socket. Controls: Function Switch, Frequency, Band Switch. Power Requirements: 108 VDC at 25 mA; and 6.3 V AC or DC at 0.75 A. Dimensions: 9⅜" W x 6½" H x 9⅛" D.

Want faster service? Order by phone — call (616) 982-3411 day or night.

great CW kits from Heath

Your best value in Ham radio starts with a do-it-yourself Heathkit rig. Communicate with the world... start yourself on a rewarding Ham radio hobby today!

HEATH charg-a-kit REVOLVING CHARGE



Heathkit HW-8 — we've improved the world's most popular QRP Transceiver

HW-8 SPECIFICATIONS

TRANSMITTER:

DC Power Input: 3.5 watts (80 M); 3.0 watts (40 M); 3.0 watts (20 M); 2.5 watts (15 M).

Frequency Control: built-in VFO.

Output Impedance: 50Ω, unbalanced.

Spurious & Harmonic Levels: −35 dB or better.

Offset Frequency: approx. −750 Hz, fixed on all bands.

RECEIVER:

Sensitivity: 0.2 μV for readable signal; 1 μV or less for 10 dB S+N/N.

Selectivity: wide, −750 Hz @ −6 dB narrow, −375 Hz @ −6 dB.

Audio Output Impedance: 1000Ω, nominal.

GENERAL:

Frequency Coverage: 3.5-3.75 (80 M); 7-7.25 (40 M); 14-14.25 (20 M); 21-21.25 MHz (15 M).

Frequency Stability: less than 100 Hz/hour drift after 30 min. warmup.

Power Requirement: 12-16 VDC, 90 mA, receive; 430 mA, transmit.

Dimensions: 9¼" x 8½" x 4¼".

Net Weight: 4 lbs.

- ***Improved receiver section***
- ***Better frequency coverage***
- ***Front panel Relative Power Meter***

We've made the world's most popular low-power CW transceiver even better! To the Heathkit HW-7 — we have added more bands, more features and a super new receiver section that's the best in its class. The famous HW-7 QRP Transceiver helped thousands of hams work the world on a couple of watts — and on a budget. Now, in the same value conscious tradition, Heath announces the HW-8.

Pushbuttons instantly select any of the four bands — 3.5-3.75; 7-7.25; 14-14.25 and 21-21.25 MHz. Crystal heterodyne circuitry allows easy frequency tuning with a *single* dial scale for all four bands, excellent stability and fixed CW offset. Other features include adjustable sidetone volume, relative power meter, diode band switching and break-in keying with adjustable T/R delay, and RF gain control.

The direct-conversion receiver boasts dramatically improved resistance to overload and reduced microphonics and hum thanks to a new RF amplifier stage and a two-position active audio filter. Its improved selectivity gives the HW-8 the finest receiver section in its price class. You get solid copy from all over with readable signals from as little as 0.2 μV; 1 μV or less produces 10 dB S+N/N!

The HW-8 can be operated from its optional AC power supply or 12 VDC — great for vacationing or emergencies. Has built-in headphone jack, adjustable AF gain, preselector and tune controls.

Now's the time to get into the fun and challenge of low-power CW operation. Order your HW-8 today.

Kit HW-8, Shpg. wt. 7 lbs. **129.95**

Kit HWA-7-1, AC Power Supply, Shpg. wt. 3 lbs. **14.95**

Last Call! HW-7 3-band QRP CW Transceiver **$89.95**

Heathkit DX-60B Phone and CW Transmitter

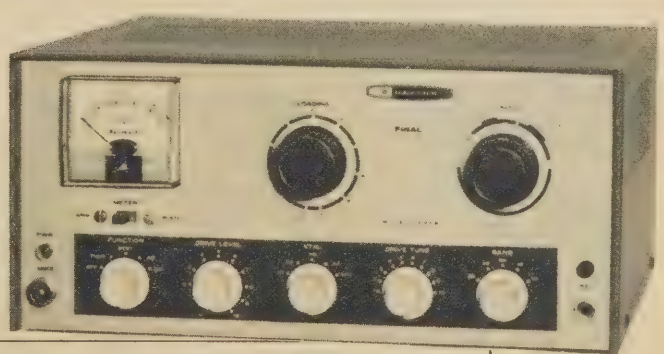
$119.95 ***Run up to 75 watts input as Novice, up to 90 watts on your General ticket***

The economical way to get on the air . . . an excellent transmitter designed for reliable Novice or General Class operation. Features up to 90 watts input, controlled carrier phone operation, four switched crystal positions, and provisions for the use of a VFO. Has Front panel controls for Crystal or VFO, Phone or CW operation.

A switchable front panel meter monitors both grid drive and plate current. Other front panels include a bandswitch for selecting proper operating band; drive tune and drive level controls; final tune control. Mike and key jacks on the front panel allow easy hookup of microphone or code key. Accessory power socket on rear provides 300 V at 50 mA DC and 6.3 VAC for VFO operation.

The DX-60B is an easy kit to assemble, with clean, open chassis layout and a pre-cut wiring harness to simplify most wiring connections. The finished DX-60B offers a clean, uncluttered, functional look that makes a nice addition to your shack.

Kit DX-60B, Shpg. wt. 24 lbs. less crystals **119.95**



DX-60B SPECIFICATIONS

Power input: 90 watts, peak; controlled carrier phone, or CW. Output impedance: 50-75 ohm (coaxial). Output coupling: Pi-network. Operation: CW or AM phone — crystal or VFO control. Band coverage: 80 through 10 meters. Power requirements: 120/240 VAC, 60/50 Hz, 225 watts. Dimensions: 6½" H x 13¾" W x 11½" D.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Code Keyers and Helpful Ham Books

HEATH charg-a-kit REVOLVING CHARGE

Let Heath help you start a rewarding CW and Ham hobby. These CW kits are easy and fun to build, and they offer excellent reliability and performance. The Amateur Radio Starter Group and informative books below help you learn how to communicate with the world.



Heathkit Code Practice Oscillator

$9.95 ***The FUN way to practice Code — it's an easy-to-build starter kit too***

Safe, portable and reliable, the HD-1416 is designed in the Heath tradition of top quality and value. Most components mount on a single circuit board for easy assembly. The unit operates from a single inexpensive 9-volt transistor battery (not supplied) and comes complete with telegraph key and phone jack. The oscillator, with built-in speaker, has a separate control for volume on the front panel — as well as a tone control accessible from the back of the cabinet. The HD-1416 can also be used as a side tone oscillator with any transmitter using grid block keying — such as the Heathkit DX-60B. Molded plastic cabinet matches Heathkit "SB" series gear.

Kit HD-1416, Shpg. wt. 2 lbs. **9.95**

HD-1416 SPECIFICATIONS

Mode of Operation: Speaker or headphones. **Tone Frequency:** 200-800 Hz adjustable. **Battery Required:** 9-volt transistor battery equivalent Neda #1604 (not supplied). **Speaker:** 45 ohms. **Headphones:** 8-2000 ohms. **Sidetone Oscillator:** Grid block keying transmitters (400 volts DC, negative maximum). **Controls:** Volume, Tone (internal). **Front Panel Connections:** Key, Phone jack. **Transistors:** (2) MPSA20, (1) 2N5249. **Color:** Wrinkle grey and dark green.



Heathkit Solid-State Electronic Keyer

- ***Sends selectable 10-35 wpm for Novices or 10-60 wpm for "Pro's"***
- ***Iambic operation for fully formed characters with minimal wrist movement***

Sending code's easy with the HD-1410 whether you're operating base or portable. The dot and dash paddles' travel and tension are easily adjustable. When the two paddles are treated as one, the HD-1410 operates like a single-paddle keyer with dot and dash memories. Dots and dashes are self-completing and always in proper proportion. Operates on 120 VAC or 12 VDC. Adjustable sidetone frequency, built-in speaker, headphone jack.

Kit HD-1410, Shpg. wt. 4 lbs. **49.95**

HD-1410 SPECIFICATIONS

Keying Output, Positive Line to Ground: max. voltage open circuit or spikes — 300 volts. Max. current — 200 mA. **Keying Output, Negative Line to Ground:** max. voltage open circuit or spikes — 200 volts. Max. current — 10 mA. **Audio:** internal speaker or jack for optional hi-Z (at least 500 ohms) headphones. **Sidetone:** adjustable from 500 to 1000 Hz. **Internal Controls:** sidetone frequency, paddle tension, paddle travel. **Rear Panel Connections:** AC power cord, 12-volt power input, keyer out, headphones, receiver audio in, ext. key. **Power Requirement:** 120/240 VAC (±10%), 60/50 Hz, 3.5 watts or 10-14.5 VDC, negative ground, 150 mA. **Dimensions:** approx. 3" H x 5" W x 7½" D. **Net Weight:** 3 lbs.

$49.95

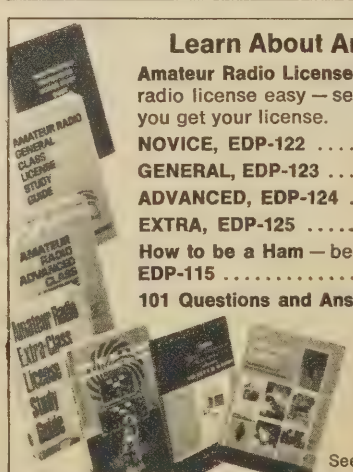


Ham starter group

Includes 4 ARRL handbooks, HD-1416 practice oscillator, 3 code-teaching records or two cassettes.

$19.95

HDP-22, Complete group with records, Shpg. wt. 6 lbs. . . **19.95**
HDP-122, Complete group with cassettes, Shpg. wt. 4 lbs. **19.95**
HDP-32, Records only, Shpg. wt. 2 lbs. **9.95**
HDP-132, Cassettes only, Shpg. wt. 1 lb. **9.95**
HDP-42, Books only, Shpg. wt. 2 lbs. **4.00**
HD-1416, Oscillator & key, Shpg. wt. 2 lbs. **9.95**



Learn About Amateur Radio

Amateur Radio License Study Guides — makes getting any radio license easy — serve as a convenient reference after you get your license.

NOVICE, EDP-122 ..... **5.95**
GENERAL, EDP-123 ..... **7.95**
ADVANCED, EDP-124 ..... **5.95**
EXTRA, EDP-125 ..... **5.95**

How to be a Ham — beginner's guide to Amateur Radio.
EDP-115 ..... **3.95**

101 Questions and Answers About Amateur Radio — introduction for beginners, valuable reference for veterans.
EDP-118 ..... **2.95**

ARRL Amateurs Handbook — up to date info & theory.
HDP-293 ..... **6.00**

See page 48 for book ordering information.

Find out how easy it is to build a kit — order the manual. See page 49.

Useful Heathkit station accessories

Add more versatility to transceivers and separates with these accessories...



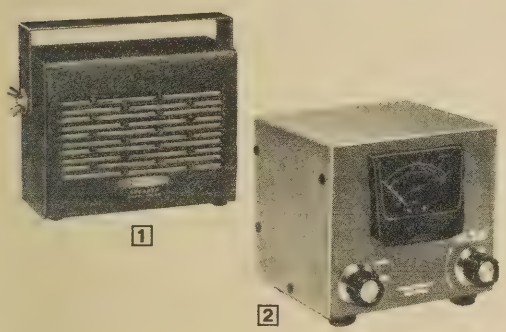
Heathkit solid-state Dip Meter delivers more performance at big savings

Another Heath value triumph — a better dip meter at lower cost. The Colpitts oscillator covers 1.6 to 250 MHz in fundamentals with a MOS-FET paraphase amplifier and hot-carrier diodes for more sensitivity and a better dip. It uses a Q-multiplier for greater detector sensitivity and a responsive 150 μA meter movement for positive resonance indications. It includes a phone jack for modulation monitoring. It's smaller and lighter than others, too. Completely portable. Whether you're checking resonant frequencies, adjusting traps, looking for parasitics, or using it as a signal generator, the HD-1250 is designed to go anywhere. It fits your hand and thanks to its solid-state design and 9-volt battery operation, it's ready to use instantly wherever you are. The custom molded gray carrying case protects the meter and the 7 color-coded, pre-adjusted, plug-in coils in transit, and makes a handy storage place.

Build it in one evening. Nearly everything mounts on two circuit boards. And when you finish, you'll have the best dip meter around — for a lot less money.

Kit HD-1250, less battery, Shpg. wt. 4 lbs. **59.95**

Here's low-cost operating convenience



1 Heathkit Mobile Speaker

8 ohm speaker in rugged steel cabinet. Gimbal mount included. 6 1/32" W x 4¾" H x 2½" D.

Kit HS-24, Shpg. wt. 4 lbs. **12.95**

2 Heathkit VHF Wattmeter

Built-in SWR bridge, adjustable sensitivity.

Kit HM-2102, Shpg. wt. 4 lbs. **34.95**

HM-2102 SPECIFICATIONS

Frequency Range: 50 MHz to 160 MHz. Wattmeter Accuracy: ±10% of full-scale.* Power Capability: To 250 W. SWR Sensitivity: Less than 10 W. Impedance: 50 ohms nominal. SWR Bridge: Continuous to 250. Connectors: UHF type SO-239. Dimensions: 5¼" W, 5 1/16" H and 6½" D, assembled as one unit. *Using a 50Ω noninductive load.

3 Heathkit Wattmeter/SWR Bridge

SWR bridge with adjustable sensitivity. Remote detector permits placement of meter in any location. Cable supplied.

Kit HM-102, Shpg. wt. 4 lbs. **34.95**

HM-102 SPECIFICATIONS

Frequency Range: 1.8 to 30 MHz. Wattmeter Accuracy: ±10% of full-scale reading. Power Capability: 10 to 2000 watts. Impedance: 50 ohm nominal. Connectors: UHF type SO-239. Dimensions: 5 1/16" H x 2¼" W x 6½" D.

4 Heathkit Coax Switch

Switches RF source to any one of several antennas or loads; unused outputs grounded. Use two to switch up to four different transmitters, receivers, etc. 1.1:1 max SWR to 250 MHz. 2 kW PEP max. power rating.

Kit HD-1234, Shpg. wt. 1 lb. **9.95**

5 "Cantenna" dummy load

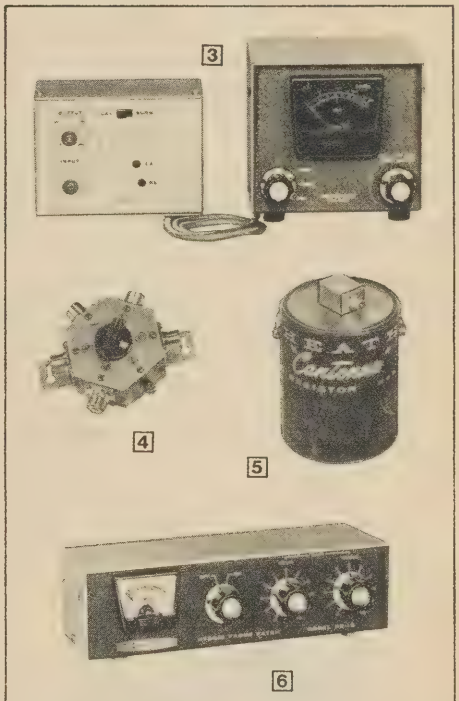
1 kW max input; 1.5-300 MHz w/SWR 1.5:1 or less. Oil not incl.

Kit HN-31, Shpg. wt. 3 lbs. **14.95**

6 Heathkit hybrid Phone Patch

Individual rcvr-line & line-rcvr gain controls; VU meter. 30 dB isolation. Matches 3-16 ohm speakers & hi-Z or 600 ohm inputs. VOX or PTT. 2⅝" H x 9¼" W x 3⅝" D.

Kit HD-15, Shpg. wt. 3 lbs. **36.95**



Helpful Ham Books

U.S. Callbook EDP-126 .....**13.95**
DX Callbook. EDP-127 .....**12.95**
Amateur Tests and Measurements. EDP-119 .....**5.50**
91 Dipole and Long-Wire Antennas — data for 73 different antennas. **EDP-180**....**4.95**
73 Vertical, Beam and Triangle Antennas. EDP-181 .....**4.95**
ARRL Antenna Handbook. EDP-182...**4.00**

See page 48 for book-ordering information.



Fully assembled base or mobile microphones

7 Heathkit Desk Mike

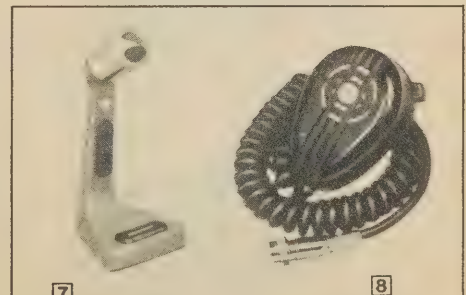
Hi-Z dynamic; grip-to-talk. With cables.

HDP-121, Shpg. wt. 4 lbs. **39.95**

8 Heathkit Mobile PTT Mike

Rugged, hi-Z ceramic mike ideal for mobile work. With cable, less connector.

GH-12A, Shpg. wt. 1 lb. **10.95**



Listen Here with Heathkit VHF/FM!



Famous Heathkit check-by-step building instructions guide you easily through the assembly of this quality VHF/FM scanning monitor.

Heathkit high-band VHF/FM scanning monitor lets you listen in on all the local action

Fire, police, emergency vehicle, marine, weather, amateur two meter FM, commercial radio, mobile and marine telephone calls...that's just some of the fascinating activity on VHF FM. And it's all yours with the Heathkit GR-110 scanning monitor.

Tunes any 9 MHz segment of the 146-174 MHz band, and you can listen to eight separate frequencies in use in your area (check state and local laws regarding use of monitors in vehicles in your locality). In the manual scanning mode you can manually select any channel from 0 through 7, with bright digital readout. The monitor stays locked on that frequency until you manually select another, or go to the automatic scanning mode. In automatic, the monitor rapidly scans all eight channels and locks on to the first one that starts a transmission. It will remain on that channel as long as a signal is present; when the signal stops, the monitor waits four seconds, then continues scanning. A priority channel "0" takes precedence over all other channels; the monitor will return to "0" whenever a station comes on that frequency, even though it might have already been locked on another channel. Front panel pushbuttons let you lock-out any channels, and the monitor automatically bypasses them as it scans.

Easy 4-evening assembly with the famous Heathkit manual, and during assembly you can wire the monitor to display the channel number only when it is locked on a frequency or continuously as it scans. Line cords and plugs for both 120 VAC and 12 VDC are provided.

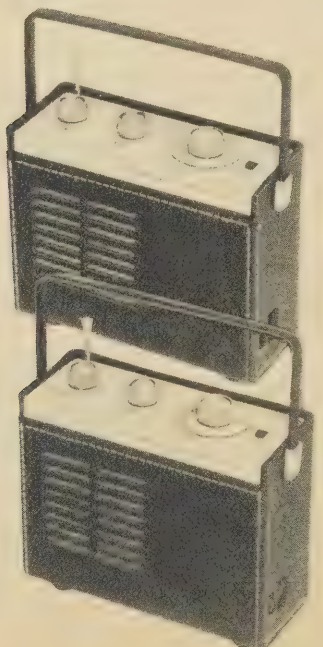
Features include built-in speaker plus external speaker jack...antenna jack...gimbal mount...complete front panel controls for volume, squelch, channel selection and scanning mode. Manual gives complete instructions on alignment and crystal ordering.

Kit GR-110, Shpg. wt. 9 lbs. **99.95**

GRA-110-1, Crystal Certificate, postpaid . . . . . each **4.95**

GR-110 SPECIFICATIONS

Frequency Range: 146 to 174 MHz. Scanning Range: Any 9 MHz segment of frequency range. Sensitivity: Less than 1 μV for 20 dB of quieting. Usable Sensitivity: Less than 0.5 μV. Adjacent Channel Rejection: —40 dB (±30 kHz spacing). Intermediate Frequency (IF): 10.7 MHz, crystal filter. IF Rejection: Greater than —80 dB. Image Rejection: Greater than —40 dB. Modulation Acceptance: 7.5 kHz maximum. Antenna Input Impedance: 50 ohms. Scan Rate: Approximately 17 channels per second. Audio Output: 2 watts into a 4-ohm load, with less than 10% distortion. Solid-State Devices: 29 transistors, 8 integrated circuits, 17 diodes. Readout Device: 3015A, 7-segment indicator tube. Power Requirements: AC: 120 volts, 50/60 Hz; 13 watts. DC: 13.8 volts. Squelched .275 amperes. Unsquelched with full audio, 9.8 amperes. Dimensions: 3″ H x 8¼″ W x 9¾″ D.



Portable VHF/FM monitors

Kit GR-88, VHF/FM Fire, Weather, Police Monitor, Shpg. wt. 5 lbs. **59.95**

Kit GR-98, Aircraft Monitor, Shpg. wt. 5 lbs. **59.95**

Kit GRA-88-1, AC power supply for both above, Shpg. wt. 2 lbs. **9.95**

GR-88 SPECIFICATIONS

Tuning Range: 152-174 MHz. Antenna Input: 50-75 ohms. Sensitivity: 2.0 μV or less for 20 dB quieting. IF Frequency: 10.7 MHz. IF Selectivity: ±40 kHz @ 6 dB down. Image Rejection: 40 dB or greater. IF Rejection: 80 dB or greater. Audio Output: 250 mW at less than 10% distortion. Speaker: 3″ round, 24-ohms, permanent magnet. Batteries: Six 1.5 V "C" cells, not supplied. Dimensions: 7½″ H x 8¾″ W x 3½″ D.

GR-98 SPECIFICATIONS

Tuning Range: 108-136 MHz. Antenna Input: 50 to 75 ohms. Sensitivity: 1.5 μV or less for 10 dB signal plus noise to noise @ 1000 Hz 30% modulation. IF Frequency: 10.7 MHz. IF Selectivity: 40 kHz @ 6 dB down; 100 kHz @ 30 dB down. Image Rejection: 40 dB or greater. IF Rejection: 80 dB or greater. Audio Output: 250 mW at less than 10% distortion. Speaker: 3″ round, 24 ohm, permanent magnet. Batteries: Six 1.5 V size "C" cells (not included). Dimensions: 7½″ H x 8¾″ W x 3½″ D.

Informative books on SWL

Shortwave Listener's Handbook — covers basic equipment to modifications for better listening, characteristics of receivers and antennas, schedules and reception reports, lists major shortwave stations by country and frequency. **EDP-196** **4.90**

ABC's of Shortwave Listening — programs available, how to get the most out of SW listening; advice on receivers & antennas in non-technical terms. **EDP-154** **3.50**

99 Ways to Improve your Shortwave Listening — antennas & their installation, receivers, accessories, listening techniques, special bands, troubleshooting. **EDP-155** . . **4.50**

How to Hear Police, Fire and Aircraft Radio — guide to VHF reception; home & mobile installations. **EDP-156** **3.50**

Dial 911 — emergency communications systems and surveillance techniques; specific information on New York City, Los Angeles & Philadelphia. **EDP-198** **3.95**

See page 48 for book ordering information.



Find out how easy it is to build a kit — order the manual. See page 49.

Listen There with Heathkit SW gear!



Here's the one you need to "take the world along"... Includes nickel-cadmium battery with built-in charger

$169.95

This is the famous Heathkit SW-717— a fine-performing Shortwave Radio and an ideal kit for a beginner—thousands have already built and enjoyed it!



$69.95

Six bands...AM, SSB & CW...plus portability

An ideal standby receiver for your shack... a top performer for general listening too

The Heathkit GR-78 is a favorite of SWLs and hams...and it's loaded with features: 190 kHz to 30 MHz coverage in 6 bands...AM, CW and SSB reception...Automatic Volume Control...switched Automatic Noise Limiter...front panel "S" meter...500 kHz crystal calibrator...receiver/standby switch...muting connection...external antenna connection...headphone jack...built-in whip antenna. Kit includes nickel-cadmium battery with built-in charger.

Kit GR-78. Shpg. wt. 13 lbs. **169.95**

GR-78 SPECIFICATIONS

Frequency coverage: Band A, 190 kHz-410 kHz; Band B, 550 kHz-1300 kHz; Band C, 1.3 MHz-3.0 MHz; Band D, 3.0 MHz-7.5 MHz; Band E, 7.5 MHz-18.0 MHz; Band F, 18.0 MHz-30 MHz. **Meter:** Indicates relative signal strength. **Intermediate frequency:** Band A thru E: 455 kHz; Band F (Double conversion): 1st IF, 4.034 MHz; 2nd IF, 455 kHz. **Sensitivity*:** 0.2 μV—10 μV depending on band and portion thereof. **Selectivity:** 7.5 kHz ±1 @ 6 dB down. **Audio output:** 300 milliwatts @ 10% distortion. **Battery:** 9.6 VDC 500 mAh Nickel-Cadmium rechargeable. **Battery charge rate:** The battery is always being charged at 20 to 25 mA when the built-in trickle charging circuit is connected to an external power source with the Receiver turned off. A full battery charge will be maintained if the Receiver is connected to an external power source and used an average of 5 hours daily at normal listening level. **Overall size:** 6¼" H x 11½" W x 9" D.
*Signal level for 10 dB signal + noise/noise ratio.



FOR FASTEST SERVICE—USE THE HEATHKIT HOTLINE!
(616) 982-3411 day or night

Top-quality SWL Accessories

Superex headphones Excellent for all Heathkit SWL receivers except GRA-43A. Dual coils, wide headband, 600 ohms.

GD-396, Shpg. wt. 1 lb. **5.95**

SWL guide Latest edition lists call signs, frequencies and addresses for SW, FM and TV stations worldwide.

GDP-315, Shpg. wt. 2 lbs. **8.95**

Long-wire SWL antenna 75' long-wire antenna with 30' of lead-in, all insulators and hardware.

GRA-72, Shpg. wt. 2 lbs. **4.50**

4-Band Shortwave just right for the novice

Most components mount on a single circuit board for easy check-by-step assembly in about five evenings

If you've ever thought about kit-building, the SW-717 is for you. It's an ideal introduction to kit construction—and the assembled radio will bring you years of entertainment! Tunes foreign broadcasts from all over the globe—amateur and CB radio bands—local and marine weather reports—ships at sea—plus standard AM—it's a world of exciting listening at your fingertips! Features wide slide-rule tuning dial with logging scale; bandspread tuning for easy separation of crowded stations; variable BFO for code reception; built-in speaker; front panel jack for external speaker or headphone; switched automatic noise limiting; signal-strength tuning meter; built in AM rod antenna plus connection for SWL antenna. It's the one to buy and build to start a fascinating kit hobby!

Kit SW-717, Shpg. wt. 10 lbs. **69.95**

SW-717 SPECIFICATIONS

Frequency Coverage: Band A—550 kHz—1500 kHz, Band B—1.5—4 MHz. Band C—4—10 MHz. Band D—10—30 MHz. **Meter:** Indicates relative signal strength. **Headphone Jack:** Accents low impedance headphones or external speaker. **Loudspeaker:** Built-in. **Controls:** Volume with on/off switch; Mode (AM, Standby & CW); BFO; Main Tuning; Bandspread Tuning; ANL on/off. **Power Supply:** Transformer operated; full-wave bridge rectifier. **Voltage Requirements:** 120/240 VAC, 60/50 Hz, 8 W. **Dimensions:** 5⅓" H x 14½" W x 8" D.



GDP-315

GD-396

GRA-72

Find out how easy it is to build a kit—order the manual. See page 49.

Heathkit Educational Kits and Books



$16.95

How to Understand and Use Your VTVM

Kit includes special power supply.

Kit EF-1, Text and power supply (for VTVM owners), Shpg. wt. 3 lbs. **16.95**

Kit EF-1-5, EF-1 & IM-18, 13 lbs. **49.95**

Kit EF-1-6, incl. EF-1 & IM-28, 15 lbs...**59.95**

Manuals Only for EF-1, (single copy) **5.00;** (10 or more) ea. **3.00.**



$19.95

How to Understand and Use Your Oscilloscope

Learn theory and application of the oscilloscope. This specially designed kit includes an experimental chassis for construction of many different circuits for tests used to illustrate and support the text.

Kit EF-2, text, special chassis and parts, Shpg. wt. 3 lbs. **19.95**

Manuals Only for EF-2 (single copy) **5.00;** (10 or more) ea. **3.00.**



$21.95

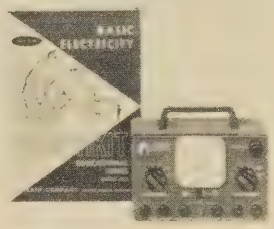
How to Understand and Use Your Signal Generator

This easy-to-understand text covers theory, function and use of RF and audio generators.

Kit EF-3, text, test chassis and parts, Shpg. wt. 3 lbs. **21.95**

Kit EF-3-2, includes EF-3 and IG-102, Shpg. wt. 17 lbs. **62.95**

Manuals Only for EF-3 (single copy) **5.00;** (10 or more) ea. **3.00.**



$32.95

Basic Electricity Kit/Course

The perfect way to learn about electricity and electronics. Learn theory, do interesting experiments to demonstrate principles. And at the same time you build a handy volt-ohm milliammeter. Your youngsters will enjoy a whole new world of electronics that can start them off on a profitable career.

Kit EK-1, Shpg. wt. 4 lbs. **32.95**



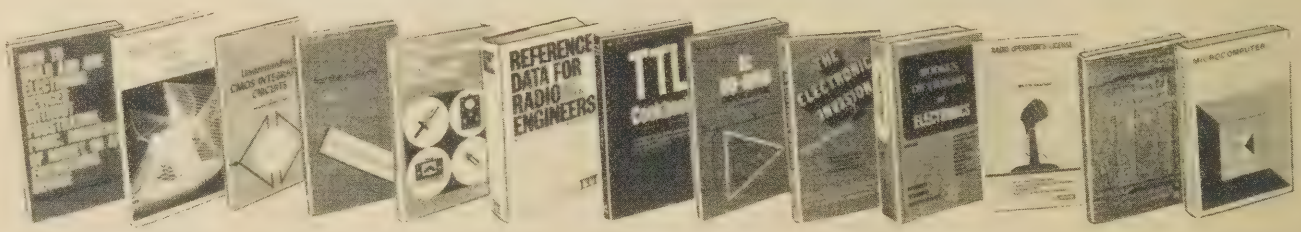
"Learn by Doing" Jr. Electronics Workshop

Explore the exciting world of electronics! Learn about basic electronic components... transistors, capacitors, resistors, loudspeakers. Build 35 different circuits, using large, detailed pictorials & famous Heathkit instructions. All circuits use solderless spring terminal connectors and are powered by four "D" cells (not included). A large schematic diagram includes a simple but complete explanation of what each component does. Each part is identified by a drawing and its schematic equivalent as used in circuit diagrams so the builder learns to read schematics while experimenting.

Build Code Flasher, Diode Tester, Transistor Tester, Rain Alarm, Timing Relay, Listening Device, PA Amplifier, Intercom, Voice Relay, Burglar Alarm, Metronome, Siren, Light Meter, Light Sensing Alarm, Target "Hit" Alarm, Light Dependent Flasher, Light Dependent Oscillator, Sound Meter, Transistor Radios, Code Transmitter, Voice Transmitter, Capacitance Relay, Wheatstone Bridge, etc.

Kit JK-18A, Shpg. wt. 10 lbs. **29.95**

Informative, Heath-approved Books for Your Electronics Library



How to Build & Use Electronic Devices without Frustration, Panic, Mountains of Money, or an Engineering Degree — a practical guide to using op-amps and other electronic devices. **EDP-202** **9.95**

Electronic Data Handbook, a convenient single-source of formulas and facts for solving virtually any electronic problem. **EDP-171 5.95**

CMOS Integrated Circuits, easy to understand explanation of how CMOS IC's work and how they are made. Build-it-yourself projects include a digital timer, wrist watch, capacitance meter and more. **EDP-197** **4.95**

Metrics for Millions, a simplified, thorough explanation of metric weights and measures — shows how to convert from metric to U.S. and from U.S. to metric. **EDP-173** **3.50**

How to Custom Design your Solid-State Equipment shows you how to adapt and combine scores of "building block" circuits to create the equipment you want. **EDP-199** **5.50**

Reference Data for Radio Engineers, a complete and comprehensive reference work that has been a favorite of radio & electronic engineers, universities and libraries for years. **EDP-176** **30.00**

TTL Cookbook, explains what TTL is, how it works, and how to use it. **EDP-183** **8.95**

IC OP-AMP Cookbook, first book published to cover basic theory of the IC op amp in detail — includes over 250 practical circuit applications, liberally illustrated. **EDP-184** **12.95**

The Electronic Invasion — a probing look at electronic snooping including technical explanations of how the equipment operates, written by a former private investigator. **EDP-203 5.45**

Modern Dictionary of Electronics. Clear, non-technical explanations of more than 18,000 terms. **EDP-177** **14.50**

Radio Operator's License Question & Answer Manual, covers what you need to know to obtain a license. **EDP-193** **7.45**

See page 48 for book-ordering information.

NEW! Learn about the hottest subject in electronics — MICROPROCESSORS!

An Introduction to Microcomputers. Microprocessor basics and a complete discussion of popular types 8080, 6800, F8, etc. **EDP-217** **7.50**

Microcomputer Dictionary and Guide. Complete reference source on microcomputers. **EDP-218** **14.95**

Find out how easy it is to build a kit — order the manual. See page 49.



Heathkit Continuing Education Series — Knowledge is at hand!

These Heathkit Programs provide a detailed overview of contemporary electronics for everyone from beginners to experienced engineers.

With the introduction of the Heathkit Continuing Education Series, Heath offers you the opportunity to easily keep pace with the changing, complex world of electronics — and improve your technical competence. Learning is easy and inexpensive with these programs.

All Heathkit Individual Learning Programs (ILP's) are self-instructional electronics programs designed to allow thorough, independent study at your own pace. This is your own personal program with no school and no admission requirement. You study when you want to, for as long as you want to. Should you choose to submit the optional final exam, a passing grade will bring you a Certificate of Achievement and Continuing Education Units (CEU). Continuing Education Units are a nationally recognized means of acknowledging your participation in non-credit adult education programs.

The ILP system teaches subjects thoroughly and efficiently. Comprehensive learning materials integrated with programmed instruction lessons and kit experiments lead you step-by-step to a thorough knowledge of electronics. Self-evaluation quizzes help check your progress.

Each Individual Learning program incorporates a variety of printed materials and experiments with audio records, to provide an overview of the subject and periodic reviews of pertinent topics.

Each subject is reinforced by actual "hands on" experience to help you learn, and give practical applications of the subject.

The Experimenter Trainers help you perform experiments as you study. They have solderless sockets for fast connections and provide built-in power supplies, signal sources and controls. After completing the programs, use the trainers for breadboarding your own design projects.

As the Continuing Education Series expands, it will include other programs, providing a complete overview of the fundamentals of contemporary electronics. Descriptions of the first programs in this exciting series are on the following pages.

For information on educational or quantity discounts, see page 48.

Electronics Fundamentals—3 Basic Programs



Buy all three programs with the ET-3100 trainer and SAVE $24.85

$154.95 Complete

$179.80 if purchased separately

These basic electronics programs take you step by step through the fundamentals of electronics. You proceed at the rate you wish, study completely at your leisure. All three programs require a Heath IM-17 VOM or equivalent, soldering iron, small tools, record player and Heathkit experimenter/trainer. Each program (or equivalent knowledge) is a prerequisite for the next.

Part 1: DC Electronics — electrical fundamentals, theory and practice — a perfect introduction to the subject

1. *Electron Theory*
2. *Voltage*
3. *Resistance*
4. *Ohm's Law*
5. *Magnetism*
6. *Electrical Measurements*
7. *Network Theorems*
8. *Inductance and Capacitance*

Includes all texts, records, 56 parts for 20 experiments. Av. completion time, 20 hours. 2.0 CEU and certificate for passing optional exam.

Model EE-3101, Shpg. wt. 6 lbs. **39.95**

Kit ET-3100, Experimenter/Trainer, Shpg. wt. 6 lbs. **59.95**

EE-3101 & ET-3100 together, 17 lbs. . . **89.95**

Part 2: AC Electronics—sine waves, inductive and capacitive reactance, impedance, phase shift, transformers and filters

1. *AC Fundamentals*
2. *AC Measurements*
3. *Capacitive Circuits*
4. *Inductive Circuits*
5. *Transformers*
6. *Tuned Circuits*

Includes all texts, records, 34 parts for 8 experiments. Av. completion time, 15 hours. 1.5 CEU and certificate for passing optional exam.

Model EE-3102, Shpg. wt. 6 lbs. **39.95**

Kit ET-3100, Experimenter/Trainer, Shpg. wt. 6 lbs. **59.95**

EE-3102 & ET-3100 together, 17 lbs. . . **89.95**

Part 3: Semiconductor Devices — transistors, zeners, SCR's, FET's, digital and linear IC's, LED's, opto-electronics

1. *Fundamentals*
2. *Diodes*
3. *Zener Diodes*
4. *Special Diodes*
5. *Bipolar Transistor Operation*
6. *Bipolar Characteristics*
7. *FET'S*
8. *Thyristors*
9. *IC's*
10. *Optoelectronic Devices*

Includes all texts, records and 11 parts for 27 experiments. Av. completion time, 30 hours. 3.0 CEU and certificate for passing optional exam.

Model EE-3103, Shpg. wt. 6 lbs. **39.95**

Kit ET-3100, Experimenter/Trainer, Shpg. wt. 6 lbs. **59.95**

EE-3103 & ET-3100 together, 17 lbs. . . **89.95**

Coming Soon — Part 4: Electronic Circuits and Applications

Heathkit Experimenter/Trainer



For the Heathkit Fundamental programs—helps you perform each project quickly and easily. And after you finish the programs, it's ideal for "breadboarding" your own design projects. Has solderless breadboarding sockets for fast, easy component connections, 2-range variable sine and square wave signal source, dual-variable power supplies for positive and negative voltages (both variable over 1.2 to 16 volts, current rating 120 mA, both regulated and short-circuit protected). Built-in 1k and 100k linear potentiometers. Center tapped power transformer secondary provides 30 V rms, 60 Hz for line experiments.

Kit ET-3100, Shpg. wt. 6 lbs. **59.95**

ETS-3100, All three programs and trainer, Shpg. wt. 38 lbs. **154.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Digital Techniques—An Advanced Program



For the experienced technician, engineer or experimenter

Learn digital fundamentals, circuit design, TTL, ECL, CMOS, PMOS, NMOS integrated circuits; SSI, MSI and LSI; ROM's, PLA's; microprocessor theory

1. ***Introduction: techniques and uses, binary numbers, digital codes.***
2. ***Semiconductor Devices for Digital Circuits.***
3. ***Digital Logic Circuits: AND gates, OR gates, NAND/NOR logic, etc.***
4. ***Digital Integrated Circuits: TTL, ECL, CMOS, nMOS, pMOS, how to choose.***
5. ***Boolean Algebra.***
6. ***Flip-Flops and Registers: latches, D & JK flip-flops, storage registers, applications.***
7. ***Sequential Logic Circuits: binary, BCD, modulo N, up/down, counters, dividers, shift registers.***
8. ***Combinational Logic Circuits: encoders, decoders, exclusive OR, comparators, multiplexers, ROM's, PLA's.***
9. ***Digital Design: combinational and sequential circuits, procedures.***
10. ***Digital Applications: counters, computers, microprocessors.***

Update your knowledge of electronics with this program in digital fundamentals. Provides a solid background with particular emphasis on circuit design. Covers the latest integrated circuits; ROM's and PLA's; even microprocessors. Helps you learn to design digital circuits for virtually any application.

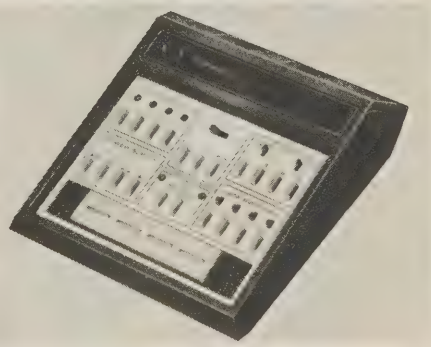
The program assumes a prior knowledge of electronics fundamentals, either completion of the Heathkit basic electronics programs or equivalent knowledge. It can be successfully completed by most technically oriented people with a math or science background.

The program includes all texts, records and 44 parts for 24 experiments. Av. completion time: 40 hours. Credit: 4.0 CEU and certificate for passing optional exam.

Model EE-3201, Shpg. wt. 9 lbs. **49.95**

Kit ET-3200, Experimenter/Trainer, Shpg. wt. 6 lbs. **69.95**

EE-3201 & ET-3200 together, Shpg. wt. 20 lbs. **109.95**



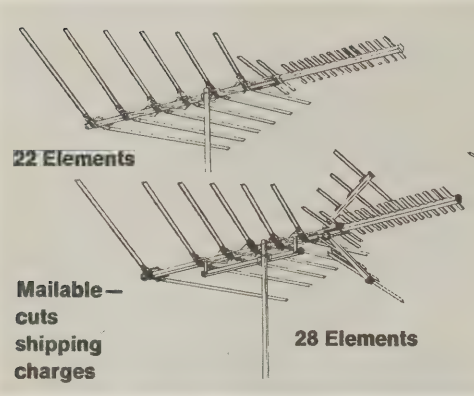
Heathkit Digital Design Experimenter/Trainer

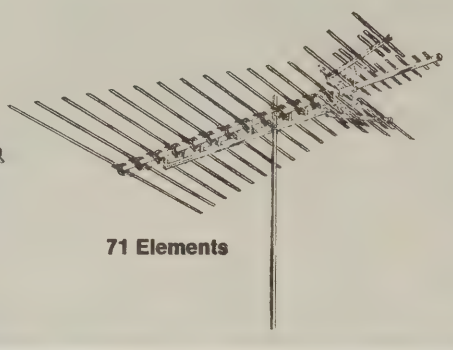
Use it to perform all the experiments in the Heathkit Digital Techniques Program, also to develop projects, build and test prototypes, verify circuit operation, check digital IC's. Has solderless breadboard sockets, four binary data switches, 2 "no-bounce" switches to pulse logic circuits, 3-frequency pulse clock generator, 4 LED's for visual indication of logic states. Three regulated power supplies: +12 V, 100 mA current limited; −12 V, 100 mA current limited; +5 V, 500 mA, overload protected. Accommodates up to eight 14 or 16-pin dual-in-line IC's, also 24, 28 and 40-pin DIP's.

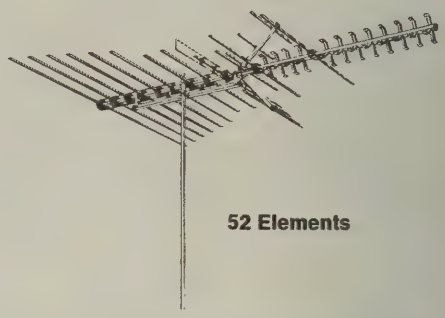
Kit ET-3200, Shpg. wt. 6 lbs. **69.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Quality antennas and accessories from Heath







"Fringe" Antenna

22-element antenna provides VHF reception up to 75 miles and UHF up to 45 miles. 119″ boom, 68″ turning radius.

GD-1431, 300 ohm, less mast and cable.
Shpg. wt. 8 lbs. **29.95**
75 ohm **34.95***

Deluxe "Fringe" Antenna

Has 28 elements, pulls in signals even in problem reception areas. Provides VHF reception up to 100 miles, UHF up to 60 miles. 131″ boom, 80″ turning radius.

GD-1441, 300 ohm, less mast and cable.
Shpg. wt. 10 lbs. **39.95**
75 ohm **44.95***

"Super" Antenna

A real signal-grabber—provides optimum reception even in the deepest fringe areas. Has 71 elements (26 on VHF, 13 driven; 45 on UHF, 1 driven). Outstanding front-to-back signal rejection; VHF Lo and Hi Band, 23 dB; UHF, 24 dB. Beam width: VHF Lo, 68°; Hi, 33°; UHF, 30°. 196″ boom, 116″ turning radius, 166″ width. All aluminum construction with gold color, weather-protected finish.

GD-1460, 300 ohm; less mast and cable.
Shpg. wt. 24 lbs. Exp./Frt. **89.95**
75 ohm **94.95***

*Order GD-298 and GD-1054 to convert to 75 ohms. ***Reg. $8.90—only $5 with antenna.***

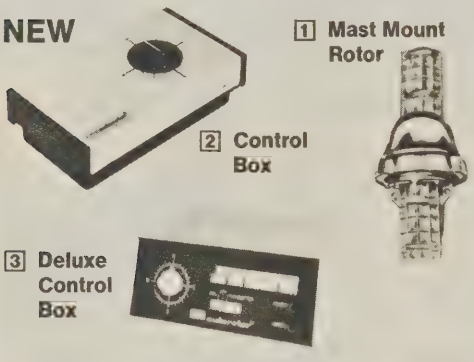
"Deep-Fringe" Antenna

Does the job anywhere but the farthest "boonies". Really reaches out with its 52 elements (18 on VHF, 9 driven; 34 on UHF, 1 driven). Front-to-back signal rejection of 20 dB on VHF Lo and Hi band; 22 dB UHF. Beam width: VHF Lo, 68°; Hi, 33°; UHF, 30°. 149″ boom; 82″ turning radius; 102″ wide. All aluminum construction with gold color weather-protected finish.

GD-1450, 300 ohm, less mast and cable.
Shpg. wt. 19 lbs. Exp./Frt. **57.95**
75 ohm **62.95***

All antennas include removable FM blocking elements.

NEW



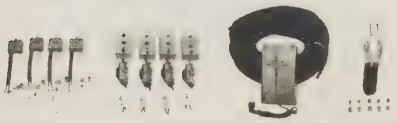
Cornell-Dubilier Heavy-Duty Auto-Rotor Systems

NEW! Antenna rotor system consists of units 1 & 2 shown at left. Pin-points your outdoor antenna for dramatically improved TV and FM reception. Heavy-duty 1 rpm rotor has positive automatic stop, instant reverse. ½″ diameter ball thrust bearing supports antennas to 150 lbs. Lower mast clamp accepts ⅞″ to 2″ diameter masts and is removable for direct mounting on rotor plate of tower. Lifetime lubricated bearings. Solid-state control box has 360° rotor control, plugs into AC outlet. Requires 5-wire cable (not supplied).

GDP-1176, Shpg. wt. 14 lbs. **54.95**

Deluxe antenna-rotor system consists of units 1 & 3 shown at left. Features solid-state rotor control with five pre-set push-buttons for instant antenna heading on your favorite stations. Also has manual directional control. Requires 5-wire cable not supplied.

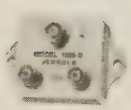
GDP-258, Shpg. wt. 16 lbs. **64.95**



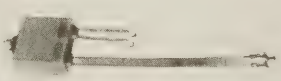
Coaxial distributor for 4-room TV/FM network—Takes single coax input from all-channel antenna, amplifies it to feed 4 wall outlets. Includes 200′ coax cable, connectors, crimping tool, 4 matching transformers/splitters.
GD-248, 14 lbs., mailable **89.95**
GD-328, 100′ coax, w/connectors and antenna boot installed, 5 lbs., mailable **13.95**



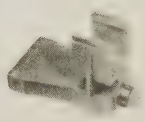
FM Coupler. takes FM signal off coax ahead of TV set.
GD-308, 1 lb., mailable . . . **12.95**



75-Ohm Mixer-Splitter. Operate 2 sets from one coax or combine two coax leads.
GD-318, 1 lb., mailable . . . **9.95**

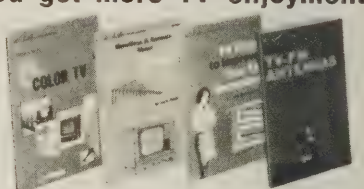


75/300 Ohm Transformer-Splitter matches one 75 ohm coax to separate VHF, UHF 300 ohm leads.
GD-298, 1 lb., mailable **4.95**



All-Channel Matching Transformer snaps on antenna, converts 300 ohms to 75 ohms for coax.
GD-1054, 1 lb., mailable **3.95**

These informative books will help you get more TV enjoyment.



Easi-Guide to Color TV—buying a set, installing the antenna, adjustments.
EDP-128 . . . . . **3.50**
Questions and Answers About Color TV—covers operation, installation, servicing.
EDP-129 . . . . . **3.95**
99 Ways to Improve Your TV Reception. Emphasis on antenna & lead-in problems.
EDP-130 . . . . . **3.50**
Home TV-FM Antennas—how to professionally design & install an antenna system.
EDP-186 . . . . . **5.95**

See page 48 for book ordering information.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Here's Why Heath TV Gives More Value for Your Money



There's Performance

Heathkit TV's are designed to offer the best performance in each price category — they use first class components like rugged fiberglass circuit boards for long life, sockets for IC's and transistors, precision resistors and capacitors, latest design picture tubes. They're engineered for reliability and quality throughout, and since you build them yourself, you have direct control over how well they're put together!

There's Savings

Because you build Heathkit TV yourself, you become familiar with each circuit and each component in the set. And the troubleshooting sections included in each manual are extensive enough to cover virtually every problem that may arise. Our color TV's even have built-in servicing instruments so you can do convergence, alignment, vertical and horizontal centering and make many other adjustments yourself. You can keep your set in peak condition year after year.

And because you built it yourself, you can service it yourself. With the high price of repairs, that can be a *really* big savings.

There's Satisfaction

The kind of satisfaction that's "built-in" to every Heathkit black-and-white or color TV is a unique feature you simply won't find in an assembled TV. The knowledge that you yourself have put together one of the most advanced pieces of electronics equipment available will give you a feeling of pride and accomplishment words can hardly describe.

See pages 89-94 for our complete selection of black-and-white and color TV's.



Simulated TV Picture

Use Anywhere B&W TV Set

This 12" (diagonal) B & W portable operates on AC, DC, or its own optional battery supply

At home, the GR-104C plugs into a wall outlet. In the car, camper or boat it works just as well from your 12-volt battery system. Outdoors, it's completely self-contained with the optional rechargeable battery pack.

Features state-of-the-art solid-state design including a single integrated circuit that takes the place of 39 parts, yet is only the size of a transistor. The 110° shell bond picture tube features a 20mm neck that requires less deflection power. The automatic gain control circuit provides rock-steady pictures every time. Up-front speaker puts the sound where you are, and detent tuning on BOTH UHF and VHF gives you total tuning convenience.

Three video IF amplifiers offer superior gain and controlled bandwidth, deluxe 4-circuit VHF "memory" tuner tunes each VHF station with outstanding precision, regulated power supply for drift-free operation.

Has up-front controls, lighted channel indicators, built-in telescoping whip antenna for VHF, loop antenna for UHF, beige high-impact cabinet with black front panel.

Assembly of the GR-104C is a delight for novice and expert alike—most components mount on two roomy circuit boards and a single wiring harness connects the boards to chassis-mounted parts. Both VHF and UHF tuners are factory assembled and aligned.

Kit GR-104C. Shpg. wt. 35 lbs. **149.95**

Optional Battery Pack.
Kit GRA-104-3. Shpg. wt. 9 lbs. **49.95**



Great take-along entertainer— no need to miss your favorite programs

GR-104C SPECIFICATIONS

Picture Size: 74 sq. in. viewing area, picture diagonal 12". **Deflection:** Magnetic, 110 degrees, 20 mm neck. **Focus:** Electrostatic. **Antenna Input Impedance:** 300 ohm balanced. **Tuning Range:** VHF, TV Channels 2 through 13, UHF TV Channels 14 through 83. **Picture IF Carrier:** 45.75 MHz. **Sound Carrier:** 41.25 MHz. **Sound IF Carrier:** 4.5 MHz. **Video Response:** To 3.5 MHz. **Audio Power Output:** 500 milliwatts into 24 ohm load. **Controls (front panel):** UHF channel selector; UHF fine tuning, VHF channel selector; VHF fine tuning. OFF/ON volume, brightness, contrast, vertical hold, horizontal hold. **Controls (rear panel):** Height, Low voltage adjust, AGC. **Tube & Semiconductor Complement:** 27 transistors, 16 diodes, 1 IC, 1 picture tube. **Power Requirements:** 110-130 volts, AC, 40 watts; 12 volts DC @ 24 watts. **Overall Size:** 11½" H x 15¾" W x 9⁵⁄₁₆" D.

Famous-for-excellence Heathkit Color TV's—

charg-a-kit

- *On-Screen digital channel readout with Optional Digital Clock available*
- *All-Channel VHF-UHF detent tuning*
- *New one-button preset picture control restores perfect picture at a touch*
- *No convergence or purity adjustments ever*

Simulated TV Pictures



19" Diagonal Measure GR-500



Color TV viewing becomes an entirely new experience.

19V and 17V screen sizes

Heath color TV, quite simply, *"looks"* better than virtually any other color TV in the marketplace, and with good reason. Since you build the set yourself, each and every circuit throughout is perfectly aligned, by you, as you build. Your TV does not have to take the jolts and jars of shipping and handling common to "in the box" sets. And, thanks to Heath's precision engineering and design innovations, you have one of the most technologically advanced color sets available.

The precision in-line gun color tube uses a slotted shadow mask for far greater light output. And the negative matrix screen offers more contrast and brightness than conventional picture tubes. This advanced tube, coupled with design improvements in signal circuits, results in a color picture of simply amazing realism and detail, with particularly dramatic improvement in night scenes due to realistic and accurate light levels.

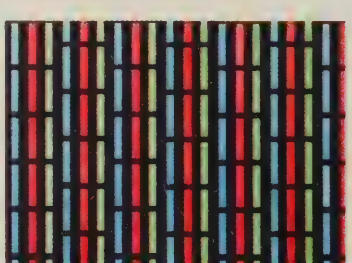
Factory adjusted and sealed static toroid yoke and magnet assemblies end purity and convergence adjustments forever. The VHF tuner features a new mixer circuit with a dual-gate FET for excellent cross modula-



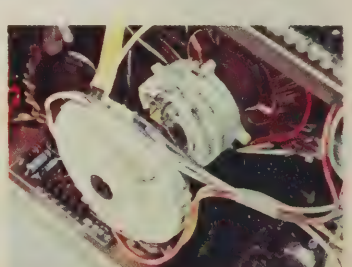
Modular circuit boards plug onto the slide out chassis for really easy servicing.



Separate test meter and troubleshooting manual let you solve most problems yourself—without expensive service calls.



New slot-mask picture tube for greater light output and picture realism.



New static toroid yoke & factory-adjusted & sealed assembly end convergence or purity adjustment — forever.

Charge a kit — no money down on any kit — see page 50 for details.

superior performance you build yourself



17" Diagonal Measure GR-400 **Simulated TV Pictures**

BUILDING YOUR HEATHKIT COLOR TV IS AN EXPERIENCE TO SAVOR!





The assembly manual is one of the finest

The world-famous Heathkit assembly manual guides you each and every step of the way — from unpacking your kit to turning the set on. Nothing is left to chance. It's an education in itself!

Assembly is a unique, creative pastime

As you proceed each easy step at a time — the kit "comes to life" before your eyes. It's an experience in satisfaction, pride and accomplishment you simply don't get with ready made products!

- all with on-screen digital readout and one-button picture control.

tion performance. The RF amplifier is also a dual-gate FET, resulting in a low-noise figure, high gain and low cross modulation. The four circuits of the tuner (most sets have just three) offer far greater selectivity than ordinary sets.

Each VHF and UHF channel is selectable simply by turning the channel selection knobs until they click to your favorite channel with positive detent tuning action. As you turn the knobs, every channel number is displayed on the screen in big bright digits — totally automatic. An automatic fine tune circuit (AFT) "locks in" on the perfect picture each time a channel is changed, so you can tune without making adjustments.

The one-button pre-set picture control is a very convenient feature, too. Once you set the brightness, contrast, color and tint (by rear preset controls), a touch of the PPC button returns the picture to perfection instantly, no matter how much the front panel controls have been disturbed.

Has front panel controls for on-off volume, tint/AFC and color; thumbwheel controls for contrast and brightness. Other features include instant-on operation with front panel defeat for vacation-time shutdown; hi-fi output jack and TV speaker defeat switch; 75 ohm VHF antenna input (ideal for cable TV installations).

The circuit and electronic components in these Heath TV's are designed for the utmost reliability, stability and long life. Metal case semiconductors are used in all power output stages for improved circuit reliability. Increased use of protection circuits assures long component life. The high voltage power supply features a voltage tripler circuit for plenty of reserve power. Quasi-complementary-symmetry vertical deflection circuit eliminates the need for an output transformer.

Has slide-out chassis, plus interconnecting cables with plugs and sockets for easy adjustment and service should the need arise. The complete and comprehensive troubleshooting manual and the test meter you use while building the kit let you solve most problems without expensive service calls.

Compare the design features, compare the quality, and you'll see that this generation of Heath color TV is the best value yet.

Kit GR-500, less cabinet, Shpg. wt. 88 lbs., Express/Frt. **499.95**

GRA-500-1, walnut veneer table model cabinet (main illustration), 17¼" H x 25½" W x 14" D (17" D including cup), Shpg. wt. 35 lbs., Express/Frt. **39.95**

GRA-500-2, floor model cabinet of selected furniture-grade wood solids & veneers with luxurious walnut stain, 28⅝" H x 29¼" W x 16⅜" D (19⅜" D including cup), Shpg. wt. 45 lbs., Express/Frt. **89.95**

Kit GR-400, with walnut veneer cabinet (16⅝" H x 24⅛" W x 12¾" D, 15¾" D including cup), Shpg. wt. 104 lbs., Express/Frt. **449.95**

GRA-403-18, roll-around cart. 22" H x 27" W x 15⅝" D, Shpg. wt. 17 lbs., Express/Frt. **21.95**

Kit GRA-2000-1, Digital Clock Accessory, Shpg. wt. 1 lb. **29.95**

GR-500, -400, SPECIFICATIONS

Deflection: Magnetic, 90 degrees. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna input impedance:** VHF: 300 Ω balanced or 75 Ω unbalanced. UHF: 300 Ω balanced. **Tuning range:** TV channels 2 through 83. **Picture IF carrier:** 45.75 MHz. **Sound IF subcarrier:** 42.17 MHz. **Sound IF frequency:** 4.5 MHz. **Video IF bandwidth:** 4.08 MHz at 6 dB down. **Hi-Fi output impedance:** 2200 Ω. **Frequency response:** ±1 dB, 50 Hz to 15 kHz. **Harmonic distortion:** less than 1% at 1 kHz. **Output voltage:** greater than 1.0V rms. **Audio output impedance:** 8 Ω. **Output power:** 1 watt. **Power requirements:** 110-130 VAC, 60 Hz, 230W.

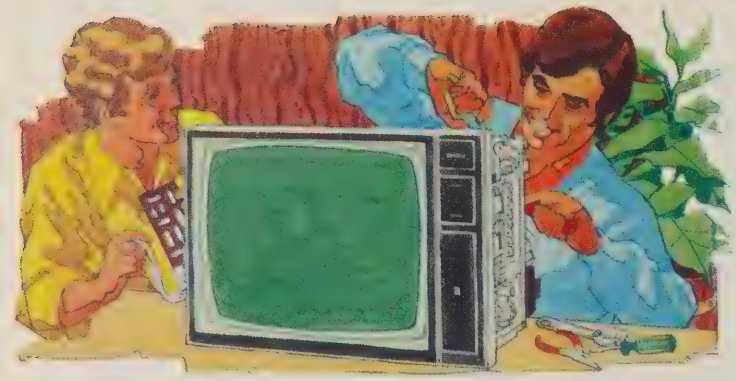
Contemporary Cabinet for your GR-500



Assembled & finished, ready to house your GR-500 in contemporary elegance. Constructed of select furniture-grade solids & veneers with luxurious walnut stain finish. 28⅝" H x 29¼" W x 16⅜" D (19⅜" D including cup).

GRA-500-2, Shpg. wt. 45 lbs., Express/Frt. **89.95**

Our finest digital design color TV's...



Heath 2000 series color TV's—our finest models feature advanced technology plus easy operation and easy assembly

Build your way to better color TV! The Heath 2000 series TV's combine the very latest technical design advances, the most modern negative matrix picture tube, and a well-thought-out design and assembly procedure that lets you put it all together yourself for pride and satisfaction that's priceless.

This is the set that brought color TV into the digital age — the Heathkit GR-2000. It offers one of the most vivid, realistic pictures in the industry today. And its superior circuitry and outstanding convenience have set new standards. It is the set other manufacturers are trying to imitate.

Total electronic tuning convenience

Simply touch a button on the front panel (or the optional remote control) and the sophisticated programmable digital counter sweeps up or down through any 16 pre-selected stations. And because the tuning is electronic, you eliminate noisy, unreliable turret tuners. Even the channel numbers are displayed electronically, right on the screen. The large, white digits can be positioned anywhere on the screen. They can be adjusted to remain on the screen for up to 1½ minutes, or permanently if you choose. And you can recall them by changing the channel or by tapping the Volume on the optional remote control.

A 25" (diagonal) color picture second to none!

Critics and owners have praised the GR-2000 for a bright, accurate color picture that seems to make programs "come alive". The picture tube provides outstanding brightness and sharpness thanks to its negative matrix and fully-illuminated phosphor dots.

Revolutionary electronics!

The GR-2000's circuitry is some of the most sophisticated in the industry. It was the first TV to utilize a fixed IF filter which virtually eliminates adjacent-channel interference — especially important in urban areas crowded with stations. This advanced filter provides ideally-shaped bandpass and — unlike the "traps" used in most sets — it never requires alignment.

And the GR-2000 uses other advanced circuitry to assure superior performance — improved signal circuits for greater clarity and definition, DC-controlled contrast for reduced interference, an integrated circuit color amplifier for more precise, realistic tints, and an IC automatic gain control for excellent sensitivity, selectivity and noise rejection. You get a consistently excellent picture year after year.

Easy and fun to build!

The completely illustrated assembly manual makes it easy to feel the pride of "building it yourself." Almost all the circuitry mounts on plug-in printed circuit boards and factory-fabricated wiring harnesses minimize point-to-point wiring. You'll find that building a GR-2000 is enjoyable — and you'll be even prouder of its exceptional performance.

Save money on service!

Because you build the set, you can service it. All the circuitry you need is built in — a digital-design dot generator, circuits for purity and convergence adjustments, vertical and horizontal centering circuits and a test meter. Most circuitry is accessible by pulling out the service drawer. You can keep your set in peak-performing condition with less inconvenience and expense. That alone makes the GR-2000 a bargain!

Optional accessories make your set even more enjoyable!

The optional Clock Module adds the time to the on-screen channel readout. The time appears in 1" digits beneath the channel and the clock can be set for 4 or 6-digit readout in 12 or 24-hour formats.

The optional remote control provides wireless selection of channel, volume, tint, color intensity — it even turns the set on and off!

And, if you want the incomparable performance of the GR-2000 in a more compact cabinet, look at the GR-2050 on page 94. It uses exactly the same chassis but with a smaller 21" (diagonal) screen. Either way, you'll own one of the world's finest color televisions.

GR-2000 SPECIFICATIONS

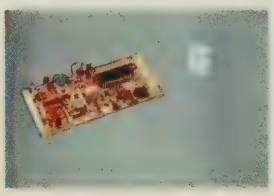
Picture Tube: 25" (diagonal). Viewing Area: 315 sq. in. Deflection: Magnetic, 90 degrees. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF: 300 Ω balanced or 75 Ω unbalanced. UHF: 300 Ω balanced. Tuning Range: TV channels 2 through 83. (Preset any 16). Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarrier: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 4.08 MHz, at 6 dB down. Hi-Fi Output: Output Impedance: 2200 Ω. Frequency Response: ±1 dB, 50 Hz to 15 kHz. Harmonic Distortion: Less than 1% at 1 kHz. Output Voltage: greater than 1.0V rms. Audio Output: Output Impedance: 4 Ω or 8 Ω. Output Power: 2 watts. Power Requirements: 110 to 130 volts AC, 60 Hz, 200 watts. Net Weight: 112 lbs.



Programmable Channel Selection through digital up-down counter with computer-like programming board—a breakthrough in new tuning convenience.



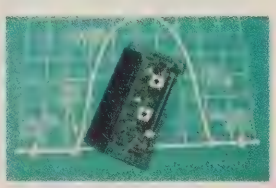
Silent All-Electronic Tuning with new combination UHF/VHF Varactor Tuner located inside the chassis where it is completely shielded.



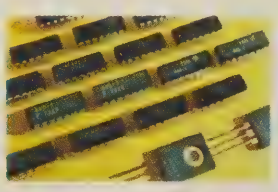
On-Screen Channel Readout in big, bright numerals, with adjustable brightness—easily viewable from across the room at any viewing angle.



On-Screen Clock Readout—gives you the correct time in four or six-digit format, and with your choice of 12 or 24 hour time.



Fixed Filter IF totally eliminates instrument IF alignment forever—gives ideally shaped bandpass—another Heath exclusive.



19 Integrated Circuits (ICs) simplify kit building and permit ultra-sophisticated technology with long term reliability.



Simulated TV Pictures

Charge a kit — no money down on any kit — see page 50 for details.

build yourself a lifetime of entertainment



GR-2000 25″ Diagonal Measure Digital Color TV Kit

Less cabinet, order your choice below.

Kit GR-2000. With chassis, picture tube, one speaker. Shpg. wt. 147 lbs. Exp./Frt. **689.95**

Remote Control for GR-2000.
Kit GRA-2000-6. Shpg. wt. 4 lbs. **89.95**

Digital Clock for GR-2000.
Kit GRA-2000-1. Shpg. wt. 1 lb. **29.95**

Second speaker for GR-2000. Fits in space provided on GR-2000 cabinets (where indicated). Includes all connecting cables.
GRA-2000-7. Shpg. wt. 3 lbs. **6.50**



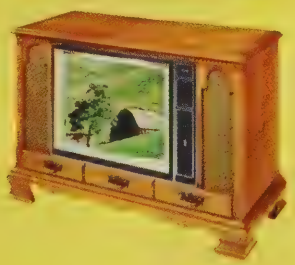
Simulated TV Pictures

Finished cabinets for your GR-2000

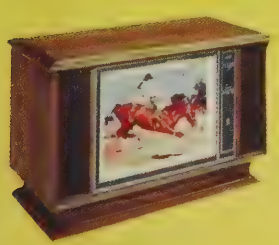
Compact Contemporary Cabinet. (Shown in major illustration at right.) Solidly constructed of wood solids and veneers finished in luxurious oiled walnut stain. Comes fully assembled with cutout for one speaker. 34⅜″ H x 33⅞″ W x 20⅝″ D (24⅛″ D including cup.) Shpg. wt. 60 lbs.
GRA-2000-8, Exp./Frt. **129.95**



Mediterranean cabinet with doors. Accepts 2 speakers. Constructed of solids & veneers; simulated wood-grain base & trim. Dark oak stain. Hardware finished in Windsor Antique Gold tone. Fully assembled, finished. 29⅜″ H x 48⅜″ W x 23″ D. (26¼″ D including cup).
GRA-2000-5, Shpg. wt. 126 lbs., Exp./Frt. **219.95**



Early American cabinet. Twin speaker capability. Distressed maple stained wood solids & veneers; simulated wood-grain trim. Hardware has Windsor Antique Gold finish. Fully assembled & finished. 31¾″ H x 47⅜″ W x 20½″ D. (23¾″ D including cup).
GRA-2000-3, Shpg. wt. 94 lbs., Exp./Frt. **169.95**



Contemporary cabinet. Dual speaker capability. Comes completely assembled and finished. Constructed of solids and veneers; oiled walnut stain. 28⅜″ H x 46⅜″ W x 20¾″ D. (23⅝″ D including cup).
GRA-2000-2, Shpg. wt. 89 lbs. Exp./Frt. **159.95**



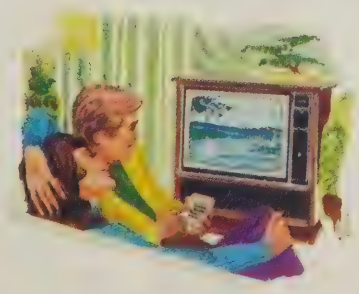
Mediterranean cabinet. Accepts 2 speakers. Crafted of solids & veneers; simulated wood-grain trim. Dark oak stain. Hardware features Antique Gold finish. Fully assembled and finished. 30¾″ H x 49⅜″ W x 20⅞″ D. (23⅜″ D including cup.)
GRA-2000-4, Shpg. wt. 92 lbs. Exp./Frt. **169.95**

See page 94 for GR-2050 21V Color TV and Cabinets

Expedited 48-Hour No-Charge Warranty Service Plan for Solid-State TV Modules!

Special service facilities have been established at the factory and all Heathkit Electronic Centers to expedite service and return of Solid-State TV circuit modules within two working days (plus transportation time). If a component proves defective during the 90-day warranty period, the modules will be serviced with no charge for parts or labor. If the problem is due to a construction error or if the 90-day warranty has expired, modules will be serviced at a fixed charge of $5.00 per module. All picture tubes warranted for two full years.

Ultrasonic Remote Control for GR-2000 and GR-2050





For armchair control of on and off, volume, channel selection, color intensity and tint, activation of digital readout. Includes receiver for in-chassis mounting, hand-held transmitter. Operates to 20 ft.
Kit GRA-2000-6. Shpg. wt. 4 lbs. **89.95**

GR-2050 TV, Cabinets, Music Accessories

charg-a-kit

GR-2050 21″ Diagonal Measure Color TV Kit

Has the same outstanding features and specifications as the GR-2000 (see complete description on pages 92 and 93), but with the popular-size 21″ diagonal measure screen. Use the same remote control and digital clock accessories as the GR-2000. Less cabinet, order your choice of space-saving contemporary or luxurious Mediterranean style below.

Easy to build with many modular circuits, more wiring harnesses, fewer point-to-point connections and chassis-mounted parts. Has built-in dot generator, service circuit board, centering and pin-cushioning circuits for easy adjustment and service.

Kit GR-2050. With chassis, picture tube, 1 speaker. Shpg. wt. 122 lbs. Exp./Frt. . . **599.95**

Remote Control for GR-2050. See complete description on page 93.

Kit GRA-2000-6. Shpg. wt. 4 lbs. **89.95**

Digital Clock for GR-2050. See complete description on page 92.

Kit GRA-2000-1. Shpg. wt. 1 lb. **29.95**

GR-2050 SPECIFICATIONS
Same as GR-2000 except **Picture Tube:** 21″ (diagonal). **Viewing Area:** 226 sq. in.



Simulated TV Pictures

Finished Cabinets for your GR-2050

Space-Saver Contemporary Cabinet. Fully assembled and finished. Wood solids and veneers with luxurious oiled walnut stain; black expanded foam speaker grille in base. 28⅝″ H x 30½″ W x 18½″ D (22$\frac{1}{16}$″ D with cup). Shpg. wt. 65 lbs.

GRA-2050-1, Exp./Frt. **119.95**



Mediterranean Cabinet. (Shown in major illustration above.) Luxurious, romantic styling. Fully assembled with wood solids and veneers high-lighted with dark oak stain and simulated woodgrain trim. Brown patterned grille cloth. 28⅞″ H x 38⅝″ W x 19¾″ D. (23$\frac{5}{16}$″ D w. cup). Shpg. wt. 89 lbs.

GRA-2050-2, Exp./Frt. **149.95**

Finished cabinets for the Famous Heathkit GR-900 Color TV

Please allow up to 10 weeks for delivery.



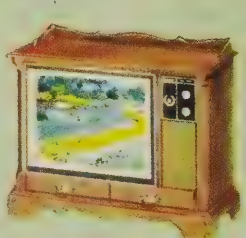
Mediterranean cabinet. Pecan-stained wood solids and veneers, simulated wood-grain base and trim. 30⅞ x 48¾ x 20⅝″ HWD (23½″ D. with cup).

Assembled GRA-404-25. 87 lbs. Exp./Frt. **169.95**



Contemporary cabinet. Walnut-stained wood solids and veneers. 30⅜ x 37⅛ x 19⅞″ HWD (22¾″ D. with cup.)

Assembled GRA-401-25. 59 lbs. Exp./Frt. **119.95**



Early American Cabinet. Maple-stained wood solids and veneers, simulated wood-grain trim. 32½ x 38½ x 19¾″ HWD (22⅝″ D. with cup).

Assembled GRA-403-25. 73 lbs. Exp./Frt. **159.95**

Put more pleasure in your playing with Heathkit musical accessories



1 Electronic Metronome

Adjustable from 40 to 210 beats per minute. Volume control. Chart relates tempos to beats per minute. One evening assembly. Requires two 9V batteries.

Kit TD-17, Shpg. wt. 2 lbs. **16.95**

2 Here comes the "fuzz"

Add fuzz to your music. Just plug between your guitar and amp. Press footswitch once to turn it on — again to play it straight. Tone, distortion controls. Runs on penlite cell (not supplied).

Kit TA-28, Shpg. wt. 4 lbs. **24.95**

3 25-watt Guitar Amp

25 watts EIA music power. Has 2 dual input channels, double spring variable reverb and tremolo (with footswitches); 2 heavy-duty 12″ speakers. ¾″ wood cabinet measures 28″ W x 9″ D x 19¾″ H.

Kit TA-16, Shpg. wt. 48 lbs. **139.95**

4 Our best Guitar Amp

120 watts EIA music power. Full controls. Harmonic modifier for "fuzzy" sound. Spring-type variable reverb. 3 channels, 2 inputs for each. Optional speaker has two 12″ woofers & horn driver. 25⅞″ W x 14½″ D x 38″ H. Includes 20′ cable.

Kit TA-17, amplifier only, Shpg. wt. 40 lbs. **199.95**

Kit TA-17-1, One speaker system, Shpg. wt. 112 lbs., Exp./Frt. **189.95**

Charge a kit — no money down on any kit — see page 50 for details.

Build a Lifetime of Music Entertainment



For family fun, for musical entertainment and education, for sheer pleasure, there's nothing more rewarding than a Heath/Thomas Organ

$549.95

HEATH charg-a-kit REVOLVING CHARGE

from $1145

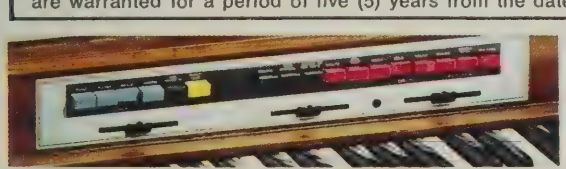
Heathkit/Thomas Spinet — exciting performance at a budget price

You get more value for your money with our TO-1160 — two 44-note overhanging manuals with tilted keys, 13-note radial arc pedal rack, 25-watt RMS amplifier and wide-range 12″ speaker. And with exclusive Color-Glo keys and our "Quick-Play" organ course, you'll be playing complete songs the first time you sit down. Fingertip controls include a Variable Pedal Volume, Variable Manual Balance; switch tabs for Vibrato, and a new Light Vibrato that gives true orchestral effects. Accessory front-panel on the keyboard has earphone and cassette recorder jacks and an AC power outlet. Plugging in the earphones defeats the main speaker to let you practice anytime without disturbing the rest of the family. Just use a conventional cassette deck to play lessons through the organ, or record your own organ selections on blank cassettes. On the upper manual are Flute 16′, 8′ and 4′; Trumpet 8′; Oboe 8′; and Violin 8′. The lower manual provides Horn 8′; Diapason 8′; Melodia 8′ and Cello 8′. The pedal rack has a Flute 16′-8′ combination. Add the Rhythm Section (below) for even more versatility. Cabinet and bench are handcrafted from selected walnut veneers in a Scandia finish, with solid hardwoods at all points that require strength and rigidity. Has plastic woodgrain decorative trim. Assembled, finished cabinet. 44″ H x 43½″ W x 25″ D.

Kit TO-1160, Shpg. wt. 233 lbs., Exp./Frt. **549.95**

SPECIAL ORGAN WARRANTY

The tone generators of the Heathkit/Thomas organs on these pages are warranted for a period of five (5) years from the date of purchase.



Add "Rhythm Section" versatility to your organ

Touching a button adds automatic bass patterns, alternating bass pedal notes, complete drum section, piano, guitar, banjo or harpsichord accompaniment and your choice of 8 rhythm patterns.

Kit TOA-60-1, Shpg. wt. 5 lbs. **279.95**

This Heathkit/Thomas Spinet Organ puts an orchestra in your home

The TO-1260 is our most versatile organ, yet exclusive Color-Glo keys will have you playing complete songs in just minutes. And the Thomas Organ Course included with the TO-1260 is almost like having your own music teacher. A breathtaking range of voices helps you create exciting orchestral effects. And the optional TOA-60-1 (below) lets you add your own "Rhythm Section" for even more fun. It lets you add any of 8 preprogrammed rhythm patterns; piano, guitar, banjo or harpsichord accompaniment on the lower manual; alternating bass pedal notes to fit the rhythm pattern you're using and more. In addition to two 44-note overhanging manuals with tilted keys, the TO-1260 features a 13-note radial arc pedal rack, two 25-watt RMS amplifiers and two 12″ speakers. A convenient accessory panel lets you plug in headphones for silent practice, use an external tape deck to play or record, or plug in an external tone cabinet. The handsome cabinet comes completely assembled and finished in your choice of Contemporary or Mediterranean styles. The cabinets are handcrafted using furniture-grade hardwoods with decorative plastic trim and are finished in hand-rubbed walnut (distressed antique in the Mediterranean).

Kit TO-1260M, Mediterranean, Shpg. wt. 255 lbs., Exp./Frt. . . **1195.00**

Kit TO-1260W, Contemporary, Shpg. wt. 247 lbs., Exp./Frt. . . **1145.00**

TO-1260 SPECIFICATIONS

VOICES: UPPER KEYBOARD (Solo): Flute 16′ Flute 8′, Flute 4′, Trombone 16′, Bassoon 16′, Trumpet 8′, Diapason 8′, Clarinet 8′, Oboe 8′, Violin 8′, Mando (Pre-Set), Harpsichord (Pre-Set), Piano (Pre-Set), Accordion (Pre-Set). LOWER KEYBOARD — (Accomp.): Tuba 8′, Diapason 8′, French Horn 8′, Melodia 8′, Cello 8′. PEDAL KEYBOARD — Bourdon 16′, Major Flute 8′, String Bass 8′. **CONTROLS:** Solo — Bright, Accomp. — Bright, Solo Sustain — Long, Auto — Sostenuto, Solo O — Tremulant, Solo Flute — Tremulant Accomp. ◘—Tremulant, Pedal Sustain — On/Off, WAH WAH — On/Off, Variable Slide — Pedal Volume, Variable Slide — Reverb Balance, Variable Slide — Percussion Volume, Variable Slide — Manual Balance, Expression Pedal. **Dimensions:** 37½″ H x 44″ W x 23½″ D.

TOA-60-1 SPECIFICATIONS

PRE-PROGRAMMED RHYTHM PATTERNS: Waltz, Fox Trot, Rock, Soul, Polka, Samba, Bossa Nova, Rhumba. **Controls:** Drums (On/Off), Tempo, Volume. **RHYTHM VOICES:** Add Cymbal, Snare/Tom Tom. **FANCY FOOT:** (Alternating bass pedal notes that fit into rhythm pattern chosen — automatic when foot pedal is held). **Control:** Syncopated or Alternating Bass. **PRE-SET ACCOMPANIMENT — Voices:** Piano (Pre-Set), Guitar (Pre-Set), Harpsichord (Pre-Set). **Controls:** ACC Pre-Sets (On/Off), Volume.

"Spring" for these super kit values from Heath





Sun season FUN is a Heathkit Metal Locator!

These Heathkit metal detectors will help you find coins, antiques, buried metal objects of any type, fast 'n easy. They're fun to use, practical too — use to locate buried plumbing pipes, metal cables, etc. before you dig.

GD-348 Deluxe Metal Locator

Heathkit metal locators use a sophisticated "induction balance" system — you don't hear anything until a piece of metal enters the field. Then the tone grows louder as you get closer to the object. Listen through the built-in speaker, optional headphones or use the front-panel meter to pinpoint your find. The GD-348 has null and ten-turn sensitivity controls conveniently located near the pistol grip handle. The shaft telescopes and the search coil folds flat for easy storage in suitcase or optional carrying case.

Kit GD-348, Locator only, Shpg. wt. 6 lbs. **89.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 1 lb. **5.95**
GDA-348-1, carrying case, Shpg. wt. 2 lbs. **11.95**

GD-48 Standard Metal Locator

The same sophisticated "induction balance" system as our deluxe locator — no tone variations to guess at, because there is no tone until a metal object enters the field. All solid-state circuitry, telescoping shaft, built-in speaker, headphone jack, meter. A single 9-volt battery (not included) supplies power.

Kit GD-48, Locator only, Shpg. wt. 6 lbs. **69.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 1 lb. **5.95**



FREE

Base or mobile CB antenna when you buy a Johnson CB radio! See page 69.



New

CI-1078 Digital Electronic Miles per Gallon Monitor/Speedometer! See page 9.



New

IP-2718 Three-Output Experimenter Power Supply! See page 57.



New

CRT Tester Rejuvenator! See page 63.



New

Famous Hobie "Hawk" 8-ft. wingspan R/C glider at a special low Heath price. See page 24. Use it with the Heathkit 3-channel R/C system. See page 21.

HEATH
Schlumberger

HEATH COMPANY
BENTON HARBOR,
MICHIGAN 49022

POSTMASTER: If undeliverable, please do not return.

See index on page 3.

**BULK RATE
U.S. POSTAGE
PAID
Heath Company**

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Heathkit®

WINTER–1979



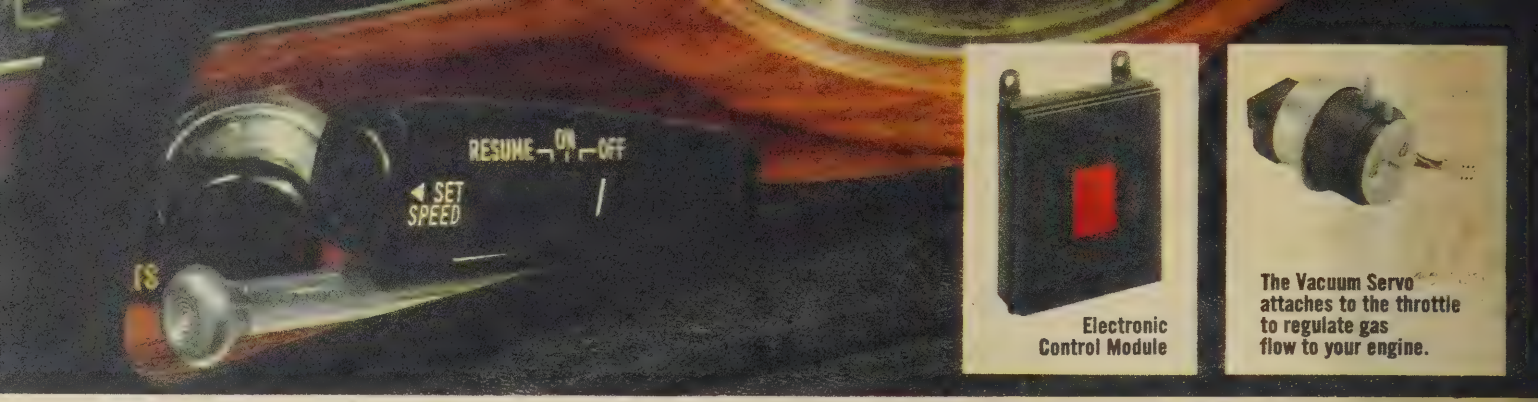
The best to you from the Laboratories at Heath!

Heathkit engineering and design has established a worldwide reputation for quality, value and innovation in bringing electronic products in easy-to-build kit form. This catalog continues that tradition. Our wide selection of new for '79 products includes a new DC to 35 MHz dual-trace oscilloscope; new amateur radio linear amplifiers; a sophisticated new digital readout stereo FM-AM tuner and new educational programs. Read about these and nearly 400 other products in this bright, new catalog!

HEATHKIT MAIL ORDER CATALOG 843

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© 1978 Heath Company

See handy index on back cover.



Electronic Control Module

The Vacuum Servo attaches to the throttle to regulate gas flow to your engine.

Heathkit/Dana CS-2048 Electronic Speed Control Makes Long Distance Driving More Comfortable

$74.95

- **Reduces driver fatigue on long trips**
- **Fits most domestic cars, vans and light trucks**
- **For both manual and automatic transmissions**
- **Disengages instantly by touching brake pedal or manual override**
- **RESUME control lets you accelerate for passing, then resume set speed**
- **Special "memory" circuit returns to cruise speed after slowdowns**

Long distance drivers will really appreciate the CS-2048. It makes the most of famous Dana Corp. technology and a crystal clear Heath instruction manual for easy installation. Just accelerate to your desired speed, press the set button and the CS-2048 will electronically maintain the speed uphill or downhill. With your foot off the gas pedal, you can shift to a more comfortable position, move your legs around to improve circulation, or simply relax and pay attention to the road.

Holding the set button decreases speed (RETARD) and sets new cruise speed; holding the resume button lets you accelerate for passing and then resumes previous cruise speed when released. A touch on the brake pedal disengages the unit or the manual override may be used. A "memory" remembers the cruise speed and returns the vehicle to that speed, at the push of a button, after the brake has been applied to slow down.

Unlike most speed controls, the CS-2048 may be used on vehicles having manual as well as automatic transmissions. The only prerequisite for installation is that the vehicle have an open driveshaft as most American and many foreign cars do. (Not for front wheel drive or transaxle vehicles). You can remove it from one vehicle and reinstall it on another even if the two makes are different.

The CS-2048 comes completely assembled so that only installation on the vehicle is necessary. Installation is comprised basically of four operations; mounting the control unit on the turn signal arm, installing the electronic control module under the dash, connecting the vacuum servo to the throttle and mounting the speed transducer unit adjacent to the driveshaft.

The CS-2048 operates on 12 VDC (negative ground only), and weighs less than 5 pounds total. The control unit is designed to mount inconspicuously on the turn signal arm within easy reach of the driver.

CS-2048, Shpg. wt. 7 lbs. **74.95**

IMPORTANT INSTALLATION NOTE:

While the CS-2048 comes fully assembled and tested, installation on the vehicle is necessary. Installation requires a certain amount of mechanical knowledge and proficiency. Modifications must be made to the throttle linkage and work must be performed under the vehicle to install the speed transducer unit. If you are uncertain of your abilities, you may wish to employ the services of a qualified auto mechanic.



Heathkit Two-way Telephone Amplifier

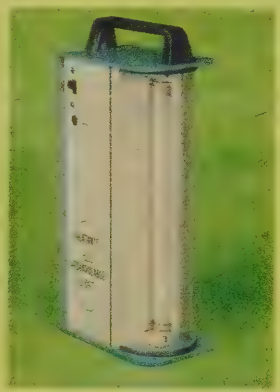
$49.95 **Talk and Listen "Hands-Free"**

This Heathkit two-way telephone amplifier makes your telephoning easier and more convenient than ever. It's ideal for conference calls at the office or family calls at home. The GD-1112 amplifies both sides of a telephone conversation to room-filling volume. You can even talk while doing housework or attending to chores because the GD-1112's built in microphone amplifies your voice from up to 10-ft. away. To answer the phone, just press the power button; to hang up, press it again. Voice activated circuitry instantly switches the amplifier from talk to listen. Pressing the Listen button disables the microphone but still lets you monitor the line. To return your phone to normal operation, just turn the amplifier off. The GD-1112 requires an external phone for operation and includes a ¼" diameter phone plug and a 1¾" square four-pin phone plug for easy installation. Operates on one 9-volt battery (not supplied) and comes with 6' of 4-conductor cable. 2½" H x 8½" W x 5¾" D. Good-looking plastic cabinet may be used on desk or wall-mounted.

Kit GD-1112, Amplifier, Shpg. wt. 3 lbs. **49.95**

Kit GRA-43-1, AC Converter, Shpg. wt. 1 lb. **4.95**

Customer-owned equipment connected to telephone lines may be subject to local tariff.



NEW Rechargeable Portable Fluorescent Light

$27.95 **Ideal for outdoor uses, especially handy for R-V's trailers, motor homes, tents, etc.**

This compact, ruggedly built portable light provides bright steady fluorescent illumination wherever you may need it. It's ideal to have in your basement, vehicles, summer homes, trailers, anywhere you could use a quick, efficient source of light. And the GD-1246's wide dispersion pattern illuminates more of a given area than a conventional beam flashlight, an important feature for using the GD-1246 at night or outdoors. The GD-1246 is especially useful for camping trips too—it eliminates potential fire hazards caused by gasoline fueled lanterns, kerosene lamps or candles. The unit features a built-in rechargeable battery and separate pre-assembled battery charger. You can use the light for hours, then simply plug it into an AC outlet (or your car's 12-volt lighter socket) to restore full power. Metal case, 3⅛" W x 9⅜" H x 4¾₁₆" D. The GD-1246 is an easy kit to build too, with minimal wiring and mostly mechanical assembly. It's an ideal kit for the first-time builder and a practical, affordable unit that will provide years of trouble-free serivce.

Kit GD-1246, Shpg. wt. 5 lbs. **27.95**

Kit GDA-1246-1, 12-volt Adapter/Charger. Shpg. wt. 1 lb. **4.95**

Unique, Money-Saving Electronic Kits!

Digital Readout Electronic Scale offers "space age" convenience

$99.95

- **Shows your weight far more precisely than dial scales**
- **Electronic Reliability — no springs, weights or pins to go wrong**
- **Rugged, moisture-proof die-cast aluminum housing**

The Heathkit Digi-Scale is a digital readout "weighing machine" that shows your weight in big, bright, computer-like LED's. Even with a 300-lb. capacity, it reads out to 1/10th of a pound (or it can be wired to read out in kilograms). It's far more precise and easier to read than conventional dial scales, and you can order it at a low kit-form price or factory assembled and tested.

The "weighing machine" uses solid-state circuitry and a strain-gauge transducer element like those used in expensive electronic laboratory scales. There are no mechanical weights or springs to go out of adjustment and affect readings.

A zeroing feature allows fine adjustments for accurate weighing of small items (weigh the baby, but not the blanket). Has handsome burled walnut-finish platform with durable, moisture-proof cast aluminum housing. Battery-operated, so it's safe to use even after a shower. The kit includes extra cable so you can place the readout at eye level, on a wall, anywhere it's convenient. Operates on six inexpensive "C" cells, not included. Platform size, 11½" x 11½" x 1⅝". Readout/control, 6" x 3½" x 1½".

Kit GD-1186, Shpg. wt. 9 lbs. **99.95**

Factory assembled and adjusted GD-1186. Readout non-detachable. Reads in pounds only in increments of $\frac{1}{10}$ of a pound.

GDW-1186, Shpg. wt. 9 lbs. **139.95**

GD-1186 SPECIFICATIONS. Display: 4-digit, ½" high LED. Low-Battery LED. Display Update Rate, approx. 1 second. **Full Scale:** 300 pounds (136 kilograms). **Resolution:** 1 part in 3000. **Accuracy:** 1% or 1 count, whichever is greater. **Repeatability:** 0.5% of reading or 1 count. **Overload Capacity:** 50% of full capacity. (Not damaged by weight up to 450 lbs.) **Power Requirement:** 6 "C" type dry cell or alkaline batteries (not supplied).





SAVE $50!

The world-famous Accutrac® 4000 Turntable in kit form by Heath — build it yourself and SAVE!

$329.95 Kit

- **The world's ONLY "totally" programmable turntable**
- **Play individual cuts in the order you choose**
- **Repeat-play or skip individual cuts**
- **No soldering — plug-in circuit boards and wires with all connectors for easy 2-3 hour assembly**

The world-famous Accutrac 4000 turntable has established a new standard in state-of-the-art performance and convenience, and now Heath brings it to you in money-saving kit form. The Accutrac gives you total "computerized" control over how you play your records, and you can operate it from its own front panel controls, or from your easy chair with the wireless remote control included! The remote control transmitter operates on a 9-volt battery (included) and has a range of up to 30 ft. so you can operate the Accutrac from anywhere in your room.

Has superior turntable features too: precision direct-drive; die-cast, dynamically-balanced platter; tubular "S" shaped tonearm with electronically controlled cue, pause and muting, anti-skate and individual 5% variable pitch control for each speed. The built-in cartridge tracks at ¾ to 1½ grams, and provides a frequency response of 10 Hz to 24,000 Hz. Overall size, 18½" W x 17⅜" D x 6" H. Includes base, dust cover, wireless remote transmitter and receiver, built-in high performance cartridge. Kit assembly of the AL-1700 is really easy, with a comprehensive step-by-step assembly manual, plug-in circuit boards and wires with all connectors attached. Typical assembly time is just 2-3 hours, and there's absolutely NO soldering! The remote transmitter and receiver are fully assembled too.

Kit AL-1700, Shpg. wt. 27 lbs. ..... **Was 379.95, Now 329.95**

AL-1700 SPECIFICATIONS: Turntable Speeds: 33⅓ and 45-rpm, electronic speed change. **Variable Pitch Controls:** 5% Range, individual control for each speed. **Build-up Time:** Within 2 seconds to full speed. **Wow and Flutter:** less than 0.03 WRMS (DIN 45507). **Rumble:** Better than −70 dB (DIN 45539B), better than −50 dB (DIN 45539A). **Cartridge Type:** low-mass induced magnet. Output: 3.5 mV/5.5 cm/sec. **Channel Separation:** 28 dB. **Stylus Tip:** 0.0003x0.0007" elliptical diamond. **Power Requirement:** 120 VAC, 50/60 Hz.



NEW The famous Discwasher DiscKit™

KEEP YOUR RECORDS AND CARTRIDGE CLEAN for better sound and longer life! The performance-proven Discwasher items included in this kit are: Discwasher record brush with fluid; Zero-stat anti-static pistol and test light and a precision stylus Cleaner. All in a handsome fitted tray with dust cover.

ADP-1286, Shpg. wt. 4 lbs. **49.95**

Get in on Kitbuilding Fun and



Our budget-priced super-accurate Digital Alarm Clock is an ideal choice for your first kit!

$27.95

- **"Snooze" feature lets you catnap up to an hour**
- **Power failure indicator tells you to reset clock**

Now a pleasant electronic "beep" can start your day out right — and at a very low price! The clock features a pleasant blue-green display that automatically adjusts to ambient light conditions and is easily wired to give you the time in either a 12- or 24-hour format. Also, in addition to hours and minutes, the GC-1107 indicates AM and PM, tells you when the alarm is set, and alerts you if the clock has been shut off during power interruptions. The alarm on/off switch is easily accessible at the rear of the 1107's cabinet. And if you're the type who hates to face the sunrise, the "snooze" feature, also accessible on the rear panel, will allow you to take 9-minute catnaps for up to an hour if you choose! A Slow switch and Fast switch let you advance the time for easy, accurate setting. And to avoid accidental bumping, or the curiosity of children's little fingers, both switches plus the Time-Alarm switch have been recessed into the base of the GC-1107's mounting cabinet.

The GC-1107 has a built in speaker so you'll easily hear its alarm, is styled in a handsome simulated wood-grain finish that fits any decor, and at this low price, is really a bargain. 2¼" H x 7" W x 4¾" D.

Kit GC-1107, Shpg. wt. 3 lbs. **27.95**



Unique Programmable Doorbell lets you welcome guests with your favorite tune

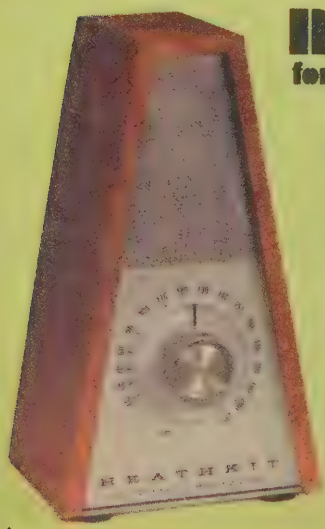
$44.95

- **An exciting, FUN way to greet your friends**
- **Program your favorite tune up to 16 notes**

A FUN to build and use kit that will brighten your home all year 'round! A one-octave C through C "keyboard" lets you program any tune up to 16 notes — celebrate the season, a birthday, an anniversary, a special party — whatever you like. Change notes by simply rearranging the leads. And installation is easy too — just wire between existing bell transformer and TD-1089. The TD-1089 is loud enough to be heard throughout most homes, but you can add extra speakers to spread the sound throughout the house. Handsome brown plastic cabinet with gold color trim and tan fabric panels.

Kit TD-1089, Shpg. wt. 3 lbs. **44.95**

TD-1089 SPECIFICATIONS: Power Requirement: 16 volts AC, 50/60 Hz, from standard doorbell transformer (not supplied) with 10 VA Rating. **Tone Characteristics:** Decaying, mellow. **Speaker Size:** 3" x 5" oval — 16 Ohm. Extra speakers can be added for a total of not less than 16 Ohms. **Programming Matrix:** 13 notes x 16 beats — same note up to 9 beats. **Dimensions:** 5¾" H x 8⅝" W x 2⅝" D. **Net Weight:** Approx. 1½ lbs. **Power Drain:** Idle, 6 watts, Maximum 12 watts.



NEW! for winter ● Precision Electronic Metronome for Music Practice

Maintains a steady beat so you can practice easier and more efficiently — ideal for music students and teachers alike. A front panel control turns the unit on and adjusts the tempo from 40 to 210 beats per minute. A rear panel control adjusts the volume. A handy and informative chart on the bottom of the cabinet relates the number of beats per minute to tempos in different time signatures. The excellent repeatability and precision of this unit make it ideal for practicing "set pieces" over and over, without tempo changes. Handsome cherry finish birch cabinet with non-marring felt feet. Easy 1 evening kit assembly. Requires two 9-volt batteries (not supplied).

TD-1257, Shpg. wt. 2 lbs. **17.95**



Take-Along Pocket AM Portable Radio with Good Sound

$16.95

Tune into news, weather or sports wherever you may be with this handy pocket transistor radio

Here's a handy and stylish pocket portable radio that's a great first-time kit too — an ideal way to introduce yourself (or a friend) to kitbuilding. Anywhere you play the GR-1008 — at the beach, camping, around the house — you get first rate performance and good sound from the big built-in 3½" speaker. The GR-1008 features a rugged high-impact black and white case with a sleek, modern look. And it measures just 4" H x 7⅞" W x 2" D so it's handy for pocket or purse. Operates on a single 9-volt battery (not supplied).

Kit GR-1008, Shpg. wt. 2 lbs. **16.95**

Satisfaction with one of These Practical Projects

Touch Control Switches give you remote on-off control of lights or small appliances

- **Sensor Plate mounts anywhere for instant on-off control**
- **Touch-Control light switch features half-brightness position**
- **Multiple touch plates can be attached to the same wire**

These touch-control switches are among the most convenient and practical kits we've ever offered — they give you on-off switch control wherever you need it, without the bother and expense of extra outlets, wall boxes, or rewiring. They consist of a control unit and a touch plate. Simply plug the lamp or appliance into the control unit, and plug the control unit into an AC outlet. The remote-touch plate mounts anywhere and connects to the control unit by an easily concealed wire. We supply 20-ft. of wire, or you can use your own for longer runs. You can use more than one touch-plate too — or use any other metal — door knob, rail, etc. as a touch plate. Control unit, 1¼ x 2⅜ x 3½". For 105-135 VAC, 60 Hz. Both feature single board construction for fast and easy assembly.

Touch-Control Light Switch. For incandescent lamps up to 150 watts. Features half-brightness position to save energy and increase bulb life. Simply touch the plate for half-on, longer for full-on, touch again for off. Static protected.

Kit GD-1187, Shpg. wt. 1 lb. **12.95**

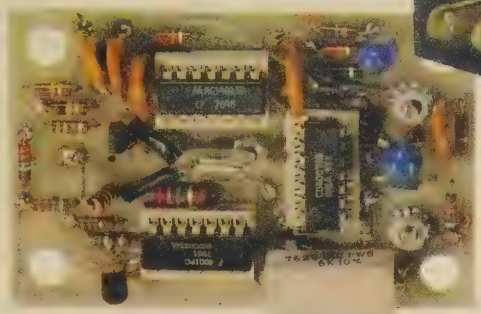
Touch-Control Appliance Switch. For televisions to 225 watts, fans and blowers to 180 watts, incandescent lamps and heaters to 300 watts maximum. Circuit is static protected and unit can be plugged into any standard outlet. Not for use with AM radios.

Kit GD-1287, Shpg. wt. 2 lbs. **15.95**

only **$12.95** Light Switch



1 EVENING KIT
Fast, Easy Assembly



Single Circuit Board Assembly Cuts Construction Time

[1] Low-cost photoelectric Lamp Switch

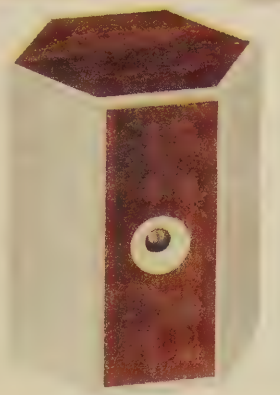
Great low-cost "insurance". Turns lights on in the evening, off in the morning — automatically. Helps discourage burglars while you're away from home by giving your home a "lived-in" appearance. Just plug it into any wall outlet, adjust the sensitivity and the GD-600 does the rest. For incandescent lamps up to 150 watts. A great 1-evening kit.

Kit GD-600, Shpg. wt. 2 lbs. **5.95**

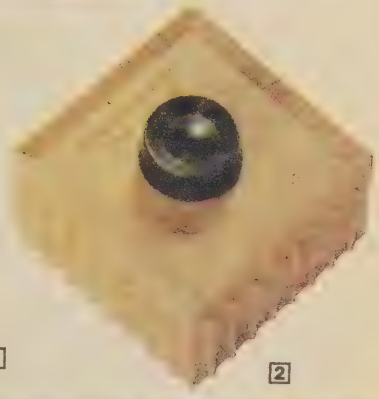
[2] Tabletop Lamp Dimmer provides precision lighting

Set the mood for any activity with just the right amount of light — smoothly adjusts the brightness of table or floor lamps up to 300 watts. Eliminates annoying burned-out elements in 3-way bulbs, even helps bulbs last longer. Build several and create the decorator's touch, in lighting, in every room of your home. For 120 VAC. Makes a great heat-control, too, for pencil-type soldering irons used in circuit board work, installing ICs, etc. Measures 3¼" H x 3¼" W x 3¼" D.

Kit GD-1018, Shpg. wt. 2 lbs. **7.95**



[1]



[2]



Get Started in Amateur Radio with this fun to build Code Practice Oscillator

$9.95 **This Heathkit Code Practice Oscillator is Recommended for use with our Amateur Radio Novice License Program. See page 17 for details.**

This Heathkit Code Practice Oscillator is the right way to begin your Amateur Radio hobby! Fun to build and use! Most components mount on a single circuit board for easy assembly. The unit operates from a single inexpensive 9-volt transistor battery (not supplied) and comes complete with telegraph key and phone jack. Has built-in speaker, phone jack for use with headphones, volume and adjustable internal tone control. Once you get your license, the HD-1416 can serve as a side tone oscillator for any transmitter using grid block keying. Plastic cabinet matches Heathkit "SB" series. Ideal for use with our Amateur Radio Novice License Course, see page 17.

Kit HD-1416, Shpg. wt. 2 lbs. **9.95**



This two-way Freezer Alarm could save you hundreds of dollars!

$14.95 **Helps you prevent food spoilage by alerting you if your freezer malfunctions.**

Here's really effective "insurance" for your freezer and it's contents! It signals if the freezer door is left open; and it signals if freezer temperature reaches 20°F even though the door is closed. The dual-alarm system uses both an audible "beep" and a flashing light. The visual alarm is especially useful for mobile or commercial uses where high noise levels may mask the audible alarm. Battery operated so it keeps working even if AC power fails. Operates on two standard "C" cells (not supplied). The alarm shuts off automatically when freezer temperature returns to about 10°F. Sensors install easily in any freezer; alarm box mounts anywhere. Includes 20-ft. cable, any length can be used. Other applications are described in the manual.

Kit GD-1183, Shpg. wt. 2 lbs. **14.95**





- Reads barometric pressure
- Shows wind speed and direction
- Reads indoor and outdoor temperature
- Handsome wood-grain plastic cabinet

Stay "on top" of conditions with this easy-to-read five-function weather station

$94.95 The Heathkit ID-1290 Weather Station monitors indoor and outdoor temperatures, barometric pressure, wind speed and direction — all with electronic accuracy and reliability. It's ideal for home or office, airport pilot lounges, anywhere accurate and instant weather information is needed.

The barometer lets you observe changes as small as 0.02 inches of mercury to indicate changing weather conditions. The thermometer is calibrated in two degree increments from −40 to +120°F and a switch selects indoor or outdoor readings. The windspeed indicator has two ranges — 0-30 mph or 0-90 mph, and 8 wind direction lights offer true 16-point resolution for precision readings.

The ID-1290's walnut-grained plastic cabinet can be hung vertically or horizontally; or used as a handsome and distinctive desk set with the stands included. The remote transmitter assembly (windcups, weather vane and outdoor temperature sensor) clamps onto any 1" to 1½" diameter TV antenna mast and is connected to the plaque with optional 8-wire cable (right). Easy and enjoyable kit assembly makes the ID-1290 a great project for first-time builders too. Includes remote transmitter assembly.

Kit ID-1290, Shpg. wt. 8 lbs. **94.95**

ID-1290 SPECIFICATIONS: Wind Speed: 0-30 mph, ±2 mph; 0-90 mph, ±5 mph. **Direction:** 8-point readout over 360°. **Temperature:** 0° to +120°F, ±2°F (typ. INDOOR); −40° to +120°F, ±2°F (typ. OUTDOOR). **Barometric Pressure:** 29-31 inches of mercury within 0.02 inches, accurate up to altitudes of 10,000 ft. **Operating Temperature:** Receiver, −32° to 100°F; Transmitter, −40° to +120°F. **Power requirement:** 110-130 VAC, 50/60 Hz, 3.5 watts. **Dimensions:** Wall mount, 20½" W x 7" H x 2" D; Desk, 20½" W x 7" H x 6¾" D. **Net Weight:** 7 lbs.

8-Wire cable for remote transmitters

Use to connect remote-transmitter assemblies to ID-1290 or ID-1590 below. Cable is well-insulated for excellent weather resistance.

IDA-1290-1, 50 ft. cable, 2 lbs. **7.95**

IDA-1290-2, 100 ft. cable, 4 lbs. **13.95**

IDA-1290-3, 150 ft. cable, 6 lbs. **18.95**



1 Digital Wind Speed and Direction Indicator

Outstanding accuracy and easy-to-read digital display make this kit a "must" for pilots, boaters — anyone whose activities are affected by the wind. Pick the two readout modes you want from the three available: miles or kilometers per hour, or knots. Switches select mode and front-panel lights show which is in use. Incandescent bulbs mark the 8 principal compass points, providing 16-point resolution. Includes transmitter assembly as above. Use cable above.

Kit ID-1590, Shpg. wt. 7 lbs. **69.95**

ID-1590 SPECIFICATIONS: Wind Speed: 0-99 in miles per hour, knots or kilometers per hour (choice of two). **Response Threshold:** 3 mph. **Accuracy:** ±1 digit or ±10%, whichever is greater. **Direction Response Threshold:** approx. 2 mph. **Operating Temperature:** Remote transmitter, −40 to +120°F; Receiver, 0 to 150°F. **Power Requirement:** 120 VAC, 50/60 Hz, 6.5 watts. **Dimensions:** Receiver, 2½" H x 7" W x 5" D; Remote transmitter, 30" boom.

2 Digital Indoor/Outdoor Thermometer

Monitor indoor/outdoor (or any two temperatures) with a big, bright, ½" high digital readout. The readout includes plus and minus signs as well as indoor and outdoor indicator lights. Select Fahrenheit or Celsius and continuous readings of one temperature or alternate readings of both. The 10' indoor and 75' outdoor cables included let you place the temperature sensors just about anywhere for a variety of custom applications — home freezer, hot house, basement, swimming pool, almost any temperature. Black Cycolac® plastic case with teak-grain vinyl inserts.

Kit ID-1390A, Shpg. wt. 4 lbs. **69.95**

ID-1390A SPECIFICATIONS: Temperature Range: Fahrenheit −40 to +120°; Celsius, −40 to +50°. **Accuracy:** Celsius, ±1°C from −15° to +50°C, ±2°C from −30° to −15°C. Fahrenheit, ±1°F from +20° to +120°F, ±2° from −30° to +20°F. **Display:** 2½-digit planar gas discharge with + and − sign. **Power Requirement:** 110-130 VAC, 60 Hz, 4 to 6 watts approx. **Dimensions:** 2½" H x 7" W x 5" D.



NEW Heathkit Weather Computer

The most advanced home weather station you can buy!

$369.95

- **Indicates, Stores and Retrieves Indoor and Outdoor Temperature**
- **Monitors Wind Speed and Direction**
- **Shows Important Changes in Barometric Pressure**

The ID-4001 Computerized Weather Station is the only device of its kind available today. In a single, compact unit this microprocessor-based instrument indicates time, indoor and outdoor temperatures, wind speed and direction, and barometric pressure. It displays average wind speed and calculates wind chill factor. It recalls the date and time of maximum and minimum temperatures, date and time of wind gusts, date and time of maximum or minimum barometric pressure. It even tells you whether pressure is rising or falling and the rate of change per hour — an important factor in storm predicting. If you need weather information for any purpose — the ID-4001 is for you!

The ID-4001 uses a remote transmitter with windcup and weathervane that have been designed in an aerospace wind tunnel and use new infra-red sensor technology for higher accuracy than conventional indicators. The transmitter clamps to any 1" to 1½" diameter TV antenna mast and is connected to the unit with optional 8-wire cable (order at right). Terminal strips on the bottom of the unit let you connect a chart recorder to make permanent records of temperature and barometric pressure. You can also connect an external battery to hold the memory contents during brown-outs or power interruptions. There's even a computer output so you can connect the ID-4001 to Heath computers (or others) for computer-assisted weather research. Handsome solid oiled walnut cabinet makes the ID-4001 an attractive addition to any decor.

Kit ID-4001, Shpg. wt. 13 lbs. **369.95**

IDW-4001, Assembled and Tested, includes 100′ 8-wire cable. 20 lbs. **595.00**



Easy Kit Assembly with PC boards and wiring harness

The ID-4001 is an easy and enjoyable kitbuilding experience too, with uncrowded circuit boards for easy parts placement and wiring harnesses to minimize point-to-point wiring.

There's NEVER BEEN a Weather Station That Does All This!

TIME/DATE DISPLAY. 6-digit display shows time in hours, minutes, and seconds; and shows date in month and day. You can alternate time-date displays or display either continuously. Has AM-PM indicator for 12-hour time format.

WIND VECTOR. 2-digit display shows wind speed in mi/h, km/h or knots. Wind direction is shown by one of 16 indicators identified by compass points and radial degrees. Stores highest wind speed for memory recall with date and time of occurrence.

THERMOMETER. Displays indoor or outdoor temperature with + or — signs, °F or °C indicators. Stores highest and lowest temperatures for memory recall with date and time of occurrence. It even computes wind chill factor!

BAROMETER. 4-digits show barometric pressure in inches of mercury or millibars. Separate indicators show rising or falling pressure. Stores maximum or minimum readings for memory recall with date and time of occurrence. Also computes rate of change per hour.

ID-4001 SPECIFICATIONS: DIGITAL CLOCK/4-YEAR CALENDAR. Display: 6- digit, 12 or 24-hour format time display, 4-digit date display. AM-PM indicator in 12-hour format. **Time Accuracy:** Determined by accuracy of AC line. No accumulative error. **Rear Panel Controls:** Clock start-stop, month-hour advance, day-minutes advance, 10 minutes advance, time-date hold, 12-24 hour time format. **WIND VECTOR: Display:** 2 significant digits, separate indicators identify miles per hour, kilometers per hour or knots. **Memory:** Date, time and magnitude of maximum gust. **Accuracy:** ±5% or better. **Front Panel Controls:** Peak gust memory and average wind select. **Rear Panel Controls:** mi/h, knots, km/h select. **Direction Display:** One of 16 indicators arranged in circular compass configuration. Identified by compass points and radial degrees. **Accuracy:** ±11.25 degrees. **THERMOMETER: Display:** 2½-digit readout with + and — signs, indoor-outdoor and Fahrenheit-Celsius indicators. **Temperature Range:** —40° to 70° C; —40° to 158° F. **Accuracy:** ±1° on Celsius readings; ±2° on Fahrenheit readings. **Memory:** Date, time and magnitude of maximum and minimum temperatures. **Front Panel Controls:** Wind chill, min. temp. and max. temp. **Rear Panel Controls:** Indoor-outdoor display hold, °C or °F select. **BAROMETER: Display:** 4-digit readout. Separate indicators for rising or falling and inches of mercury or millibars. **Pressure Range:** 28.00 to 32.00 in Hg (inches of mercury). 981.9 to 1050 millibars. **Accuracy:** ±0.075 in H plus ±0.01 in Hg/°C. **Memory:** Date, time and magnitude of maximum and minimum pressure. **Front Panel Controls:** Min. and max. pressure; rate of change/hour. **Rear Panel Controls:** Millibars or inches of mercury select. **Operating Temperatures:** Outdoor assemblies, —40° C to +70° C (—40° F to 158° F). Unit, 10° to 35° C (59° to 95° F). **Power Requirement:** 120/240 VAC. Provision for external battery connection. **Dimensions:** 16" W x 7¼" H x 6" D.

8-Wire cable for ID-4001

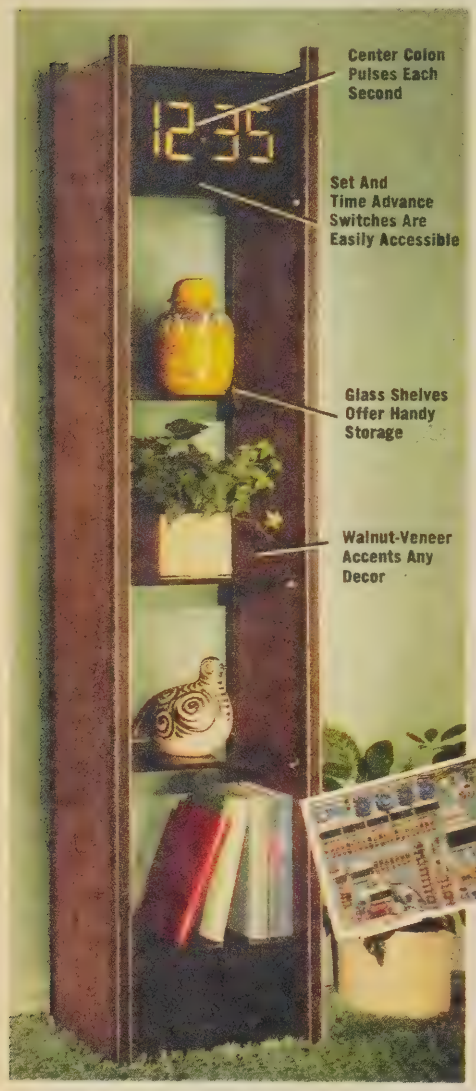
IDA-1290-1, 50 ft. cable, 2 lbs. **7.95**

IDA-1290-2, 100 ft. cable, 4 lbs. **13.95**

IDA-1290-3, 150 ft. cable, 6 lbs. **18.95**

Electronic Accents for your Home from Heath

These easy and fun-to-build kits add a colorful and practical touch to just about any home decor!



Heathkit Digital Electronic "Super-Clock" in a full 5′ high modern etagere cabinet

4 EVENING KIT
Fast, Easy Assembly

$169.95

- **Automatic dimming circuit adjusts to room light for a charming pleasant glow**
- **Hour and minute readout can be seen from anywhere in the room**

Add elegance with a "space-age" touch anywhere in your home! The GC-1195 "super-clock" is housed in a stylish cabinet with four smoked glass shelves for plants, books or knick-knacks — and the cabinet is finished in handsome simulated walnut-veneer laminate with anodized aluminum corner pieces.

The 3¼" high clock digits glow brightly enough to be read even in daylight, and an automatic dimming feature adjusts them to diminishing room light for a charming, subtle display in dim or darkened rooms.

The clock displays hours and minutes, with the center colon pulsing each second. A special power failure indicator circuit pulses the display brightness to show that power has been interrupted and clock must be reset. Easy time setting is accomplished by readily accessible, easy-to-use fast and slow time advance switches located on the bottom of the clock chassis.

The GC-1195 is an excellent and truly useful selection for the first time kit builder. The manual is clearly written and guides you step-by-step through construction in a manner which is both easy to understand and easy to follow. Even if you've never soldered before you'll find no need for concern. That's because the manual also includes an informative discussion and diagrams, demonstrating proper soldering technique and the way to correctly place and mount electronic components.

The GC-1195 is a handsome addition to most any decor, and a great conversation piece. For even more charm and "Old World" distinction, add our electronic clock chimes accessory (described below).

Kit GC-1195, Shpg. wt. 58 lbs. **169.95**

GC-1195 SPECIFICATIONS: Display: 3¼" diffused incandescent readout. **Format:** 3½-digit (12-hour) time readout. **Power requirement:** 108-132 VAC, 50/60 Hz, 30 watts. 216-264 VAC, 50/60 Hz, 30 watts. **Dimensions:** 14" W x 9½" D x 60½" H. **Net Weight:** 48½ lbs.



Electronically Synthesized $69.95 Westminster Chimes

Adds a distinctive touch!

Builds into the GC-1195 or GC-1197 to provide rich, electronically synthesized "Big Ben" chimes: 4 notes on the ¼-hour, 8 notes on the ½-hour; 12 notes on the ¾-hour and the full 16-note passage and hour annunciation on the hour. And you can even turn on a reassuring electronic "tick-tock". Has volume and pitch adjustment, sound-decay control, "tick-tock" volume control, built-in speaker.

Kit GCA-1195-1, Shpg. wt. 3 lbs. **69.95**

Digital Electronic "Super-Clock" in a handsome shelf case

$89.95

Complements any decor!

Uses the same electronics and display as the GC-1195 floor clock, but is housed in a good-looking walnut-veneer cabinet suitable for shelf, table or desk-top use. Accepts optional GCA-1195-1 electronic chimes. Specifications same as GC-1195 above, except dimensions are 6½" H x 12½" W x 6¼" D.

Kit GC-1197, Shpg. wt. 18 lbs. **89.95**

Make your parties brighter and more festive with your music matched to this exciting Color Organ

$89.95 **Make your favorite music "come alive" with the vibrant, pulsating color of this handsome decorator unit**

The TD-1006 Color Organ adds exciting sights to your sound system. With its extra wide dynamic range, it translates any kind of music into pulsing, whirling starbursts of color. Just connect the TD-1006 to the speaker leads of any sound source (except AM radio). Without effecting the sound, active filters separate the audio signal into four frequency bands, each with 35 brilliantly colored lights — red for bass, blue for low-midrange, green for upper-midrange and amber for treble (140 lights total). The lights pulsate in time to the music creating spokes of color that seem to swirl. Just wire the two circuit boards and install the prestrung lights in the factory-assembled cabinet. A single knob on the side controls sensitivity and turns power on or off. Input is 1 volt RMS min. to 22 volts RMS max. Line isolation provides source protection. Walnut-grained vinyl-clad case, black-out front panel, 22¾" W x 22¾" H x 4½" D. For 120/240 VAC.

Kit TD-1006, Shpg. wt. 34 lbs. **89.95**



Don't Miss the Fun of Treasure Hunting!

What'll be your first find — Indian head pennies? Old Silver Dollars? Or maybe Spanish Doubloons? Build your Heathkit Metal Locator and see!



1 The Exciting Heath "Cointrack" Our Finest Metal Locator!

$149.95

- **Search coil optimized for "coin-shooting"**
- **Adjustable discrimination • Pushbutton tuning**

The GD-1190 is the finest Metal Locator Heath has ever produced! Designed exclusively for "coinshooting" it features a search coil optimized for coin locating, and adjustable discrimination so incredibly good you'll be finding "treasure" in areas where high "junk" content makes operation with other locators all but impossible! Pushbutton tuning maintains maximum sensitivity — effortlessly. And for shallow water searching, the 1190's waterproof head won't leave you out of the action. Weight is minimal and to cut fatigue even more, an adjustable shaft is provided for maximum comfort. The 1190 collapses for easy storage and transportation. And with its optional GDA-1190-1 Nickel-Cadmium battery pack installed, you can recharge the 1190 at home, or in the field from the cigarette lighter of your car! Or it operates on six ordinary AA cells (not included). An outstanding value.

Kit GD-1190, Shpg. wt. 5 lbs. **149.95**
GDA-1190-1, Nickel-Cadmium Battery Pack, Shpg. wt. 2 lbs. **16.95**
GDA-1190-2, Headphones, Shpg. wt. 2 lbs. **9.95**
GDA-1190-3, Carrying Case, Shpg. wt. 1 lb. **9.95**

NOTE: Discriminating-type metal locators are vastly superior to other types in locating coins in "junky" areas. However, this capability can be greatly diminished in highly mineralized or very wet soil.

GD-1190 SPECIFICATIONS: Sensitivity: Typically 4" to 6", may be less depending on coin size, amount of discrimination and soil material. **Method Of Detection:** Off resonance type. **Output:** Meter, Speaker, Phone Jack. **Dimensions:** Search-Coil: 6" diameter. Overall length: Shaft extended 45½", collapsed 22½". **Power Requirement:** Six—AA Dry Cells or Alkaline, or rechargeable Nickel-Cadmium battery pack (GDA-1190-1). **Weight:** 3.4 lbs.

2 Heathkit GD-348 finds buried metal objects of any type

$79.95

- **Contoured pistol-grip and up-front controls for real operating convenience**
- **Lightweight and economical**

The GD-348 uses a sophisticated "induction-balance" system so you don't hear anything until a piece of metal enters the search field. Then the tone grows louder as you get closer to your quarry. You may listen through its built-in speaker, optional headphones or use the front-panel meter to pinpoint your find. The GD-348 has null and ten-turn sensitivity controls conveniently located near the pistol grip handle. The shaft telescopes and the search coil folds flat for easy storage. The GD-348 is a fast, enjoyable kitbuilding project, too.

Kit GD-348, Shpg. wt. 5 lbs. **79.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 2 lbs. **5.95**
GDA-348-1, Carrying case, Shpg. wt. 2 lbs. **11.95**

Versatile AM/FM Digital Electronic Alarm Clock-Radio

$119.95

- **Stay "on time", even if AC power fails thanks to the built-in "fail safe" circuit**
- **"Catnap" with the 7-minute snooze button**

Here's everything you need in a quality clock-radio! 24 hour set'n forget alarm, built in 3" x 5" oval speaker for truly fine sound, and style that fits anywhere. The GR-1075 displays time in the conventional 12-hour format. Shows AM and PM too. A lighted decimal pulsates to indicate seconds and also shows that the alarm is properly set. The 24-hour alarm cycle can wake you with a gentle pulsating, electronic "beep" or with soft music from the FM or AM radio station of your choice. High quality electronics and 5 μV FM and 300 μV/M AM sensitivities make sure you'll "pull-in" a large selection of stations day-or-night. And for the sleepyhead, the clock's 7-minute snooze cycle will give you up to an hour of relaxing catnaps. Two 9-volt batteries (not supplied) take over during power interruptions and keep the clock counting. When power is restored the GR-1075 will be right on time!



The front panel features finger-flip switches for on/off; AM/FM selection; radio or electronic alarm; "wake-up" alarm set; "Snooze" cycle; plus volume and AM/FM tuning controls. Black plastic cabinet with brushed aluminum trim strip, and simulated walnut-grain end panels. For 120/240 VAC, 50/60 Hz operation. 4½" H x 13⅜" W x 8⅛" D.

Kit GR-1075, Shpg. wt. 10 lbs. **119.95**

Heath Makes Garaging Your Car Safe and Easy



Build the Heathkit Garage Door Opener and Provide Your Family with Year-Round Security and Convenience

An investment that really pays off in time and labor saved, convenience and extra security. Simply touch the button on the wireless transmitter in your car — your garage door opens automatically and the garage light turns on. Touch the button again, and the garage door closes behind you. Has a powerful ⅓ hp motor that opens even the heaviest residential garage doors (up to 7½′ maximum height). The adjustable slip clutch provides opening safety, stopping the door automatically if obstructed. When the door is closing, the important safety reverse feature takes over. If the door encounters ANY obstruction it stops and reverses instantly, and returns to full open position. Assembly is really easy, there's absolutely no soldering! Connecting leads are precut and push-on connectors are already installed. A separate doorbell-type switch and 20′ cable let you operate the unit from anywhere you may choose.

The fully assembled transmitter and receiver in the GD-3309 system incorporate the latest in solid-state electronics for improved security and reliability. The units are digitally coded with 256 code combinations, so you can set and change your own code anytime. The improved electronics provides greater immunity to external signals too — helps prevent false operation from other garage door openers, CB and Amateur transmitters, television, radios, etc. They are FCC-approved and usable with standard NEC 3-wire systems.

GD-3309 SPECIFICATIONS: Overall Size: 120″ L x 12″ H x 9″ W. **Motor:** 117 VAC ⅓ HP. **Open and Close Time:** Approx. 12 seconds. **Mounting Clearance:** 3″ above highest point of door travel. **Safety Lamp:** Delay circuit keeps lamp on 1 to 3 minutes. **UHF TRANSMITTER:** Powered by standard 9-volt battery. **RF Frequency:** 310 MHz. **Useful Temperature Range:** −50°F. to +140°F. **UHF Receiver:** Powered by 24 VAC from opener mechanism. Usable on any 3-wire mechanism or 2-wire with addition of GDA-3309-3.

Kit GD-3309C, Transmitter, Receiver, Mechanism.
Shpg. wt. 57 lbs. Motor Freight **169.95**

Kit GD-3309D, Two Transmitters, Receiver, Mechanism.
Shpg. wt. 57 lbs. Motor Freight **184.95**

Kit GDA-3309-1, Mechanism only. Shpg. wt. 44 lbs. Motor Frt. **139.95**

Kit GDA-3209-2, Adaptor for jamb and pivot doors. 3 lbs. **9.95**

GDP-3309A, 1 Transmitter only. Shpg. wt. 1 lb. **24.95**

GDP-3319A, Transmitter, 1 Receiver. (3-wire system) 1 lb. **49.95**

GDP-3329A, 2 Transmitters, 1 Receiver. (3-wire system) 2 lbs. **64.95**

GDA-3309-3, Power Transformer. Allows use of new transmitter and receiver with 2-wire system door openers. 1 lb. **5.95**

Furnace Filter and Setback Thermostats let you breathe cleaner air, save on fuel bills



Electronic Furnace Air Cleaner prevents "stale" air

A truly important home improvement from Heath — it lets you breathe cleaner air throughout your house, for better health, and it removes most dust, dirt and pollen so you clean less. Helps remove smoke and reduce odors too. Helps cut down on dust and dirt so you save time and money on cleaning. Installs easily in place of the air filter on your furnace or air conditioner, usually without cutting or altering ductwork. The GD-1196 removes particles — dust, dirt, pollen, even smoke — as small as 1/100th of a micron from the air in your home. It's far more efficient and effective than an ordinary fiberglass filter. It's designed for use with most gas, oil or electric furnaces, and it can be used in both heating and cooling systems. Consists of a power supply and filter panel that replaces your present filter. Power is obtained directly from your furnace blower motor, or from a standard AC outlet (with accessory switch below). NOTE: Kits below differ in size of filter panel. Check your furnace's filter size/capacity before ordering. For two-zone homes, two filters may be used with a single power supply. CFM, cubic ft. per min. Power supply 12″ W x 8″ H x 4″ D. For 110-130 VAC, 25 watts max.

Kit GD-1196-1, 20″ x 25″ x 2″, 1000 CFM. Shpg. wt. 24 lbs. **179.95**

Kit GD-1196-2, 20″ x 20″ x 2″, 800 CFM. Shpg. wt. 24 lbs. **179.95**

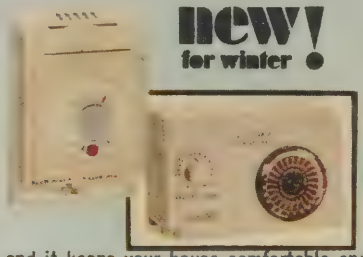
Kit GD-1196-3, 16″ x 25″ x 2″, 800 CFM. Shpg. wt. 24 lbs. **179.95**

Kit GD-1196-4, 16″ x 20″ x 2″, 640 CFM. Shpg. wt. 24 lbs. **179.95**

Extra Filters. Use order nos. above, with GDA prefix i.e., GDA-1196-1, 20″ x 25″ x 2″ Filter only. Av. Shpg. wt. 10 lbs. ..... **each 99.95**

Accessory Air Flow Switch. Lets you operate the GD-1196 from standard 120 VAC wall outlet. (Required when GD-1196 is used with 240 VAC furnaces and air conditioning systems.) **Kit GDA-1196-5,** Shpg. wt. 2 lbs. **24.95**

NOTE: Some areas may require professional installation. Check local building codes.



Solid-State Heat/Cool Setback Thermostat with 12 Periods

Saves you up to 20% on your heating bills, provides automatic control and energy savings with your air conditioner too!

The GD-1269 Setback Thermostat helps you save money on both your heating and air conditioning bills, and it keeps your house comfortable and cozy all year 'round! A programmable clock provides up to 12 different setback periods each day for both heating and cooling. In the heating control, setback temperatures range from 2° to 15° F, and the higher the setback, the greater your savings. The heat thermostat has a built-in light to indicate setback is operating properly. An "Econ Heat/Norm Heat" switch lets you override the setback. The cooling portion of the setback lets you completely shut down your cooling system when your home is unoccupied and turn it on a preset time. A "Normal Cool" switch lets you override the system for continuous cooling. Designed for use with electric cooling systems in combination with gas or oil furnaces. Operation and installation is fast and easy. Works with either four or five-wire furnace control systems. Thermostat, 3⅝″ W x 5⅜″ H x 2″ D. Controller, 6½″ W x 4⅜″ H x 2¾″ D. Transformer, 2¼″ W x 2⅜″ H x 1¾″ D.

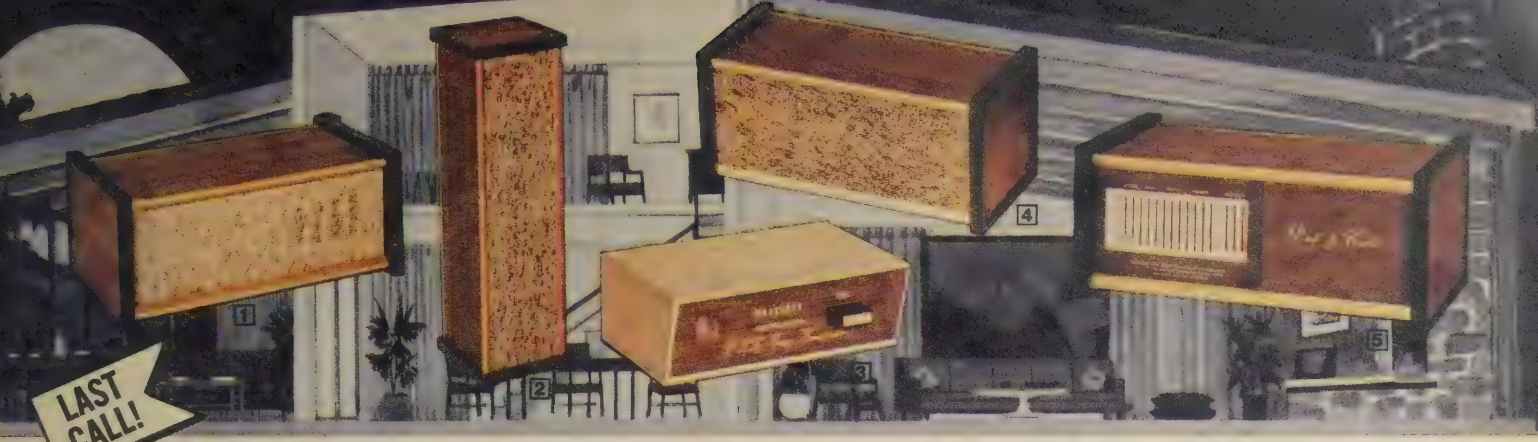
Kit GD-1269, Shpg. wt. 3 lbs. **44.95**



Save $5 on this Programmable Heat Control

The GD-1776 helps you conserve energy and save up to 20% on fuel bills by automatically reducing room temperature during one or two preprogrammed periods. Has adjustable temperature setback to more than 10° for periods of ½ hour minimum to 23½ hours maximum. Heat is returned to its normal level automatically. An ECON-NORMAL switch overrides the timer and returns your furnace to normal operation. The GD-1776 installs quickly and easily on any type of single-stage furnace. The replacement thermostat utilizes your existing 2-conductor wire. Certain combination heating/cooling systems may require professional service. Some local codes may require "hard-wiring" of the primary (120 VAC) power source by a licensed electrician. Not intended for use with 2-stage systems.

Kit GD-1776, Shpg. wt. 5 lbs. ..... **Was $39.95 Now 34.95**



Our Complete Wireless Security System gives your home the professional protection it needs

REALLY SAVE! Purchase the Central Processor and any two or more additional units and deduct 5% from the total price!

[1] **LAST CALL! Limited Quantities! Central Processor Module.** Responds to signals from any of the other modules (2 thru 5 described below) to sound the alarm. Has tamper-proof circuit that sounds alarm if AC power fails, penetrating built-in siren and outputs for external speaker and phone dialer. Time delay circuit and automatic reset provide added protection and convenience. With batteries. 4½" H x 10⅞" W x 6" D.

Kit GDA-1158-1, Shpg. wt. 8 lbs. **159.95**

[2] **LAST CALL! Limited Quantities! Ultrasonic Detector Module.** Senses motion in an area up to 300 sq. ft. Plugs directly into AC outlet. Use as many as needed as long as areas covered do not overlap. 10⅝" H x 3¼" W x 3¼" D. Note: ultrasonics operate in the same frequency range as the Heath TV remote controls, so interference between the two is possible.

Kit GDA-1158-2, Shpg. wt. 3 lbs. **74.95**

LAST CALL! Limited Quantities! Auxiliary Transmitter Module. (Not Shown). Lets you add door/window switches, mat pressure switches and other sensors to the system. Switches must be either all Normally Open or Normally Closed. Transmits signals to Central Processor. 3¼" H x 7¼" W x 3¼" D.

Kit GDA-1158-6, Shpg. wt. 2 lbs. **39.95**

[3] **LAST CALL! Limited Quantities! Emergency Transmitter Module.** Sends a signal to Central Processor by simply pushing the button. Plugs into any AC outlet. 1¾" H x 5" W x 3¾" D.

Kit GDA-1158-4, 2 lbs. **29.95**

[4] **LAST CALL! Limited Quantities! Early Warning Smoke/Fire Detector.** Use with GDA-1158-1 Central Processor or by itself with its built-in speaker. Solid-state sensor detects gases generated before flames or intense heat begins. A built-in thermal switch also activates the alarm when the temperature exceeds 135° F (57° C). 7¼" W x 3¼" H x 3¼" D.

Kit GDA-1158-5, Shpg. wt. 3 lbs. **74.95**

LAST CALL! Limited Quantities! On/Off Transmitter Module (Not Shown). Turns off intrusion channel of Central Processor with a push of the button. Plugs into any AC outlet. To turn Processor on again, simply release the button. 1¾" H x 5" W x 3¾" D.

Kit GDA-1158-3, Shpg. wt. 2 lbs. **29.95**

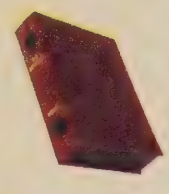
LAST CALL! Limited Quantities! Outdoor Speaker (Not Shown). Weatherproof speaker connects to Central Processor, sounds alarm outdoors so it can be heard through the neighborhood. All-weather design. Includes mounting hardware.

GDA-1158-7, Assembled. 3 lbs. **19.95**

[5] **Automatic Telephone Dialer.** Automatically dials a number you preselect — relatives, neighbors, etc., when alarm is triggered. Can be used with intrusion alarms, pressure switches, panic buttons, the GD-1158 security system, etc. Has automatic redial if line is busy, 3-digit location code, separate microphone. Battery-powered to operate if AC power fails. 4¾" H x 11" W x 6" D. With batteries. Check with phone company for installation requirements, if any.

Kit GD-1156, Shpg. wt. 7 lbs. **169.95**

The Informer® Ultrasonic Alarm provides low-cost protection



Book-size alarm provides good protection — alerts you to the presence of an intruder up to 25-ft. away from the unit. Activates indoor buzzers, lamps, doorbells, etc. when its field of coverage is broken. Features built-in time delay so you can deactivate it when you enter the room, automatic or manual reset. See GDA-1158-2 note. 2⅜" W x 10⅞" H x 7½" D. For 120/240 VAC, 60/50 Hz.

Kit GD-39, Shpg. wt. 5 lbs. **49.95**

GDA-39-1, Indoor Buzzer Alarm. Shpg. wt. 1 lb. **9.95**

GDA-39-2, Outdoor Bell. Shpg. wt. 5 lbs. **26.95**

Fully-Assembled First-Alert™ Early-Warning Smoke Detector



Warns you before smoke or flames, by sounding its self-contained built-in alarm horn. This 85 decibel horn is powerful enough to awaken people sleeping soundly behind closed doors. Operates on its own internal battery (included) that will last at least a year. 100% solid-state circuit. Temperature range: 0° 112°F. Humidity Range: 20%-95% RH. The First Alert provides excellent area coverage. In most cases, two units will provide effective coverage for an average size home. First Alert may qualify you for an insurance discount — check with your agent. U.L. listed.

GD-1414, Shpg. wt. 2 lbs. Assembled **17.95**

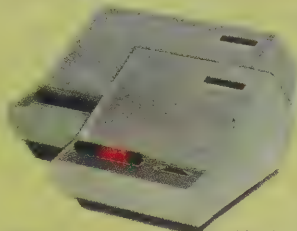
Eye Spy™ Photobeam Relay is excellent low-priced security



Consists of light source, mirror assembly and a photocell controlled relay which is activated whenever the reflected light beam is broken. Warning devices or lamps plugged into the photocell are then activated. Provides efficient, low-cost protection ideal for doorways and entrances, docks, wide aisles, etc. Works up to 25-ft. from reflecting mirror. Electronics, 5⅜" H x 4⅜" W x 5¼" D. Mirror Assembly, 5" H x 4" W x 2¾" D. It's an easy and fun-to-build kit too, goes together in just one evening.

Kit GD-1021, Shpg. wt. 3 lbs. **14.95**

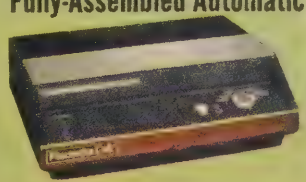
Easy-to-build Heathkit Intercoms are Step and Time Savers



The GD-140 Master station accommodates up to two Remotes. The GD-110 indoor-outdoor intercom accommodates up to four. Both can call either or all stations and Remotes can be rendered private to prevent monitoring. GD-140 Master measures 3¾" H x 6" W x 5¾" D. GD-120 measures 3¾" H x 6" W x 5¾" D. GD-110 Master is 4½" H x 8½" W x 6¾" D. GD-130 has weatherproof finish and measures 5⅜" H x 3½" W x 2⅝" D. All are AC operated.

Kit GD-110, Master Station, 5 lbs. **47.95**
Kit GD-140, Master, GD-120 Remote, 4 lbs. ... **39.95**
Kit GD-120, Indoor Rem. For 140, 110. 2 lbs. ... **14.95**
Kit GD-130, Outdoor Rem. For 140, 110. 2 lbs. ... **9.95**
GDA-110-2, 100-ft. 4-cond. cable. For GD-110, 140. 3 lbs. **9.95**
GDA-110-4, 100-ft. 2-cond. cable. For GD-130. 1 lb. **4.95**

Fully-Assembled Automatic Cassette Telephone Answerer



Records on a standard-size cassette tape. Voice actuation permits a caller to speak as long as desired without time limits on the recorder. Other features include silent monitor (only the caller's voice is heard), announce only (gives message to caller and hangs up), dictation capability, fast forward, rapid rewind, rapid erase, and more. 120 VAC powered. 9" x 11⅞" x 3⅞". Fully assembled.

GDP-1227, Shpg. wt. 12 lbs. **199.95**

Our easiest-to-build Organ kit EVER!

The Computerized Heathkit/Thomas Troubadour Organ

$1749.95

- **Save up to ⅓ when you build it yourself**
- **Microprocessor based for real versatility**
- **Easy to play even for a beginner**

The TO-1860 is Heath's easy to build version of the fabulous microprocessor-based Thomas Troubadour. Quick-learn features like Color-Glo keys, color-coordinated music, one finger chords and chord memory make it easy to play even for the beginner. Preassembled and tested modular circuit boards, wiring harnesses with built-in connectors, and no complex tuning procedures let you complete assembly in 30 hours or less. The TO-1860 utilizes the latest "computerized" microprocessor technology to produce some of the best music you've ever heard. The cabinet has a glass music rack and comes fully-assembled of furniture-grade hardwoods. A matching padded bench with storage is included.

Kit TO-1860, Shpg. wt. 256 lbs. Motor Freight 1749.95

TOA-1860-1, Demo Record & Information Packet, Shpg. Prepaid 1.50

TO-1860 SPECIFICATIONS: VOICES & EFFECTS: (Solo) — Flute 16′, Flute 8′, Flute 4′, Trombone 16′ (O), Trumpet 16′, Bassoon 16′, Diapason 8′ (O), Clarinet 8′, Oboe 8′, Violin 8′ (O), Mandolin (Preset), Banjo (Preset), Solo Sustain, Main Bright. **(Accomp.)** — Tuba Horn 8′ (O), English Horn 8′, Cello 8′ (O), Flute 8′, Flute 4′. **(Pedal)** Bass Flute 8′—16′, Pedal Sustain. **SPEAKEASY FEATURES: (Rhythm)** — Waltz, Fox Trot, Swing, Rhythm & Blues, Rock, Polka, Samba, Bossa Nova, Rhumba. **(Accomp. Presets)** — Piano, Guitar, Banjo, Harpsichord, Presets Cancel. **Additional Features:** Fancy Fingers, Strum, Arpeggio, Fancy Foot, Walking Bass. **SOUND SYSTEM:** (2) Solid State Amplifier (Stereo System). (2) 12″ Heavy Duty Speakers. **DIMENSIONS:** 37″ High, 23″ Deep, 43½″ Long. **NET WEIGHT:** 185 lbs.





The Heathkit/Thomas Keyboard Kombo lets you play like a "pro" with simple one-finger chords!

$549.95 **LAST CALL!**

- **Headphone jack for private practice**
- **Built-in 12″ heavy-duty speaker**
- **Handsome Rosewood finish cabinet**
- **12 solo instrument voices**
- **5 accompaniment instruments**
- **Minor and expression pedals**
- **Rhythm and drum accompaniment**

HEATH charg-a-kit

At the touch of a finger the TO-1102 accurately reproduces the sounds of 12 solo instruments (see specifications). As you play the solos, the TO-1102 automatically accompanies you with piano, guitar, banjo, harpsichord or flute rhythms and alternating bass notes. Variable slide controls for drum tempo and volume let you preset rhythms of Waltz, Fox Trot, Swing, Rock and Latin. Has 12 major and 12 minor chords. Fun to build and even more fun to play. Contemporary design cabinet is fully-assembled. Bench included.

Kit TO-1102, Shpg. wt. 189 lbs. Motor Freight 549.95

TO-1102 SPECIFICATIONS: Solo Instruments: Flute, Clarinet, Trumpet, Violin, Accordion, Guitar, Piano, Banjo, Mandolin, Harpsichord, Vibes, Hawaiian Guitar. **Accompaniment Instruments (Rhythm):** Piano, Guitar, Banjo, Harpsichord and Flute: **Tempos** — Waltz, Fox Trot, Swing, Rock, Latin. **Drum Controls:** Tempo — Variable Slide; Volume — Variable Slide. **Chords:** 24 one-finger Chords, Memory Chord. **Controls:** Vibrato Cancel; Reverberation, variable slide; Keyboard Balance, variable slide. On-off switch with pilot indicator. Expression control. Headphone jack. **Cabinet:** Contemporary Design with Rosewood Finish: **Sound System:** solid-state amplifier with 12″ heavy-duty Speaker. **Dimensions:** 34¼″ H x 36″ W x 21¼″ D. **Net Weight:** 150 lbs.



SAVE $239.90
Order Complete System at Right

Quality Music and PA Amplifiers at really low kit prices

1 **25-Watt Guitar Amplifier.** Features a full-control amplifier and speaker system with two heavy-duty 12″ woofers; double-spring variable reverb and tremolo, dual foot switches — ¾″ black vinyl-covered wood cabinet measures 28″ W x 19¾″ H x 9″ D. For 120/240 VAC, 60/50 Hz.
Kit TA-16, Shpg. wt. 61 lbs. 189.95

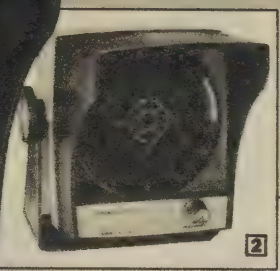
2 **LAST CALL! PA Control Amplifier.** Delivers 100 watts to two column speakers. Has six low-impedance inputs, each with bass, treble, reverb on-off and attenuation controls. 21½″ W x 11¼″ H x 7″ D. For 120/240 VAC, 60/50 Hz.
Kit TA-1620, Shpg. wt. 54 lbs. 399.95

3 **PA Speaker Column.** Has six 8″ full-range speakers, output jack for booster amp. With 50′ cable. 14″ W x 62″ H x 10¼″ D.
Kit TS-1630, Shpg. wt. 112 lbs. Motor Freight 169.95

TA-1620 Control Amplifier and Two TS-1603 Column Speakers.
If purchased separately, $739.85.
Kits TAS-1620, Shpg. wt. 319 lbs. Motor Freight 499.95

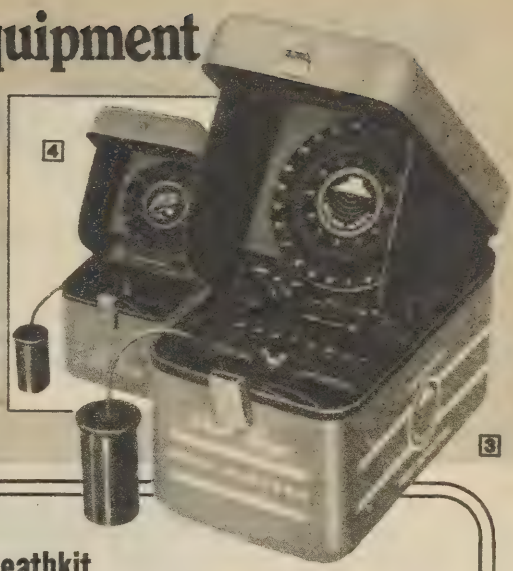
Heathkit Marine Equipment For Better Boating!







Kits 1 and 2 include your choice of through-the-hull or transom-mount transducer.



1 Dual-Range Depth Sounder with Depth Alarm

Shows depth, type of bottom, schools and individual fish, submerged objects. A high-pitched "beep" alerts you to shoals or objects projecting above any preselected depth from 5 to 240 ft. Has switch-selected 0-60 and 0-240 ft. ranges; electronically controlled motor; fixed noise rejection; polarity protection; superbright neon indicator. Cycolac case with glare-free bezel and sun shield. Gimbal mount, quick-disconnect power and transducer leads. Shpg. wt. 8 lbs.

Kit MI-1031-1, with thru-hall transducer, 15′ coax. **89.95**
Kit MI-1031-2, with transom transducer, 25′ coax. **89.95**

2 Heathkit Single-Range Depth Sounder

As above, single 0-240 ft. range, no alarm. Shpg. wt. 8 lbs.
Kit MI-1030-1, with thru-hull transducer and 15′ coax **69.95**
Kit MI-1030-2, sounder with transom transducer and 25′ coax **69.95**

MI-1030 and MI-1031 SPECIFICATIONS: Frequency: approx. 200 kHz. **Accuracy:** Within 2% of actual depth. **Transducer:** Barium titanate ceramic element encased in waterproof housing. **Power requirement:** 0-60′ range, 225 mA @ 11-15 VDC (MI-1031 only), 0-240′ range, 125 mA 11-15 VDC with one return pulse. **Dimensions:** 6½″ H x 5¾″ W x 7¼″ D.

3 Heathkit Dual-Range Fish Spotter® Sounder with Alarm

The Heathkit MI-2901 Fish Spotter® Sounder has adjustable audible alarm you set to sound off at any depth to 240 ft. Fish swimming between surface and preset depth will trigger alarm. **Includes two switch-selected ranges** (0-60′ and 0-240′) for sharper definition; bright neon-flasher for precise depth reading; noise rejection circuitry to eliminate engine ignition interference. Rugged aluminum cabinet. The transducer features a barium titinate ceramic element encased in a durable waterproof housing. Portable suction-cup transducer bracket. Powered by two 6-volt lantern batteries (not included).

Kit MI-2901, Shpg. wt. 8 lbs. **89.95**
Kit MIA-2900-1, Scanning Transducer Bracket, Shpg. wt. 4 lbs. **19.95**

MI-2901 SPECIFICATIONS: Accuracy: ±2% with motor speed of 2400 rpm in the 0-60′ range and with motor speed of 600 rpm in the 0-240′ range. **Sounding: Rate:** 40 times per second on the 0-60′ range. 10 times per second on the 0-240′ range. **Frequency:** 200 kHz, ±5%. **Noise Rejection:** Fixed at approximately 500 microseconds integration time. **Power Requirement:** 12 VDC. **Dimensions: (Less Handle):** 7″ H x 6″ W x 11″ D.

4 Heathkit Economy Fish Spotter® Sounder

Similar to MI-2901 above, but with single range to 120-ft. Reads 240′ max. Has bright neon indicator. No audible alarm.
Kit MI-2900, Shpg. wt. 8 lbs. **69.95**

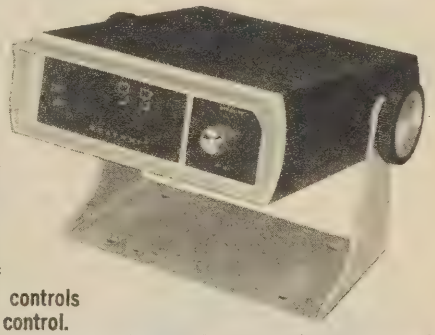
Heathkit Scanning Transducer Bracket

Designed for use with Heathkit MI-2901 and MI-2900 Fish Spotter® sounders. "C" clamp mounting. For 1⅜″ cylindrical transducer. (Not shown)
Kit MIA-2900-1, Shpg. wt. 4 lbs. **19.95**

Here's Why Heathkit Marine Equipment Belongs on Your Boat!

Heathkit Marine Equipment is designed for outstanding reliability, low cost and top performance. The depth sounders above provide easy-to-read and accurate indications of water bottom and fish or objects in between. Our digital depth sounder below provides a bright digital readout and the Thermo-Spotter is ideal for finding water temperatures at different levels. Our chart recording depth sounder (next page) lets you maintain a record of the bottom on easy-to-read chart paper; the Radio Direction Finder and Foghorn Alarm are all necessary accessories that further enhance your boating safety and pleasure.

Heathkit Digital Depth Sounder with "Shallow-Water" Indicator



Lets you know depth of water below you from 2.5 to 199 ft.
Accurate depth readings at a glance. Dual-range digital display automatically reads depth in 0.1 foot increments from 2.5 to 19.9 feet and in 1 foot increments from 20 to 199 feet. A red light signals clearance of 10 feet or less. Single knob controls power on/off and brightness control. Rugged Cycolac® case; gimbal mounting bracket; 15 feet cable for through-hull installation, 25 feet for transom mount.

Kit MI-101-1, With through-hull transducer, Shpg. wt. 7 lbs. **149.95**
Kit MI-101-2, With transom transducer, Shpg. wt. 6 lbs. **149.95**

MI-101 SPECIFICATIONS: Accuracy: ±2%, ±1 digit. **Current drain:** 300-500 mA. **Power requirement:** 10-17 VDC @ 500 mA. **Dimensions:** 2¼″ H x 6⅝″ W x 8½″ D (less gimbal hardware).

Thermo Spotter® Thermometer

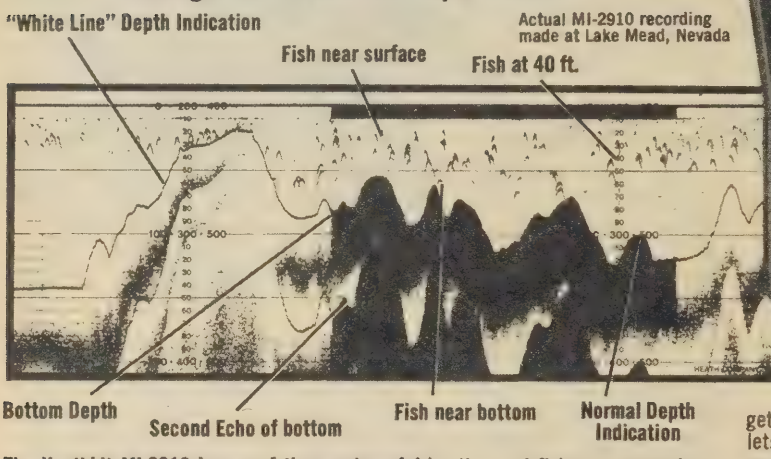


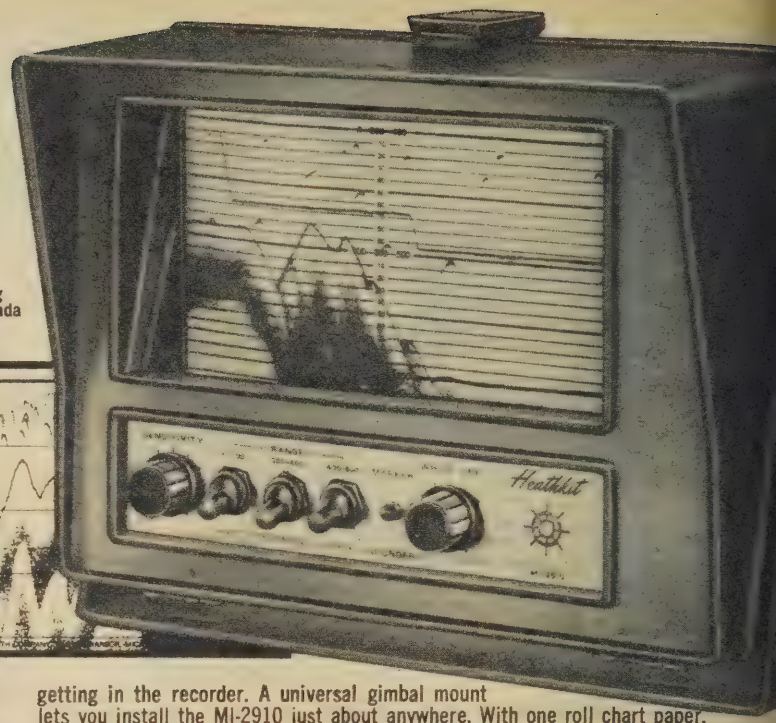
Shows you the water temperature at any depth up to 100-ft. and the fish temperature charts indicate the kinds of fish likely to be there. Completely self-contained with submersible sensing element on a 100-ft. cable. Kit includes operations manual with fish temperature preference charts. Uses 1.5-volt penlight battery (not included).
Kit MI-104, Shpg. wt. 3 lbs. ...**34.95**

Find fish faster and easier!

THE SEEKER™

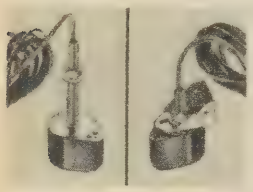
The Heathkit Straight Line/White Line Depth Recorder





The Heathkit MI-2910 is one of the most useful boating and fishing accessories you can own. It helps you find the fish, and it provides a permanent record of the best spots and depths so you can find your favorite spots again and again easily.

An on-off sensitivity control adjusts the MI-2910 to indicate the bottom and fish or other objects above it. It will clearly indicate schools of bait and small fish as well as individual large fish. Holes and dropoffs are clearly shown for lake mapping purposes too. The extra-wide-beam transducer covers a larger area of water than most conventional units, so you get a better and wider "picture" of what's below you. Its three ranges (5′ to 200′, 200-400′, and 400-600′) make it useful for virtually any lake or coastal area.



Available with through-the-hull or transom-mounted transducer.

Uses a straight line recording system for easier and more accurate chart reading and interpretation. A white line control lets you adjust the bottom indication to a fine line so objects or fish close to the bottom can be distinguished easily. A switch controlled marker puts a vertical line on the chart for easy reference marking. A roll of paper lasts approx. 13 hours for continuous charting.

The MI-2910 has two lamps to light the chart for easy operation at night. The weather-resistant case with gasket seals helps prevent water from getting in the recorder. A universal gimbal mount lets you install the MI-2910 just about anywhere. With one roll chart paper.

Kit MI-2910-1, recorder with through-the-hull transducer and 30′ cable. Shpg. wt. 17 lbs. **289.95**

Factory assembled and calibrated version of above. **WI-2910-1,** Shpg. wt. 16 lbs. **399.95**

Kit MI-2910-2, recorder with transom mount transducer and 30′ cable, Shpg. wt. 17 lbs. **289.95**

Factory assembled and calibrated version of above. **WI-2910-2,** Shpg. wt. 16 lbs. **399.95**

MIA-2910-1, Two Rolls Chart paper. Shpg. wt. 2 lbs. **9.95**

SPECIAL OFFER — SAVE $9.75! 12 Rolls Chart Paper. If pur. sep., $59.70.

MIS-2910-1, Shpg. wt. 12 lbs. **49.95**

MI-2910 SPECIFICATIONS: Power Requirement: 11-16 VDC at 1.6 amperes maximum. **Depth Range:** 5′ to approx. 600′. **Display:** straight (vertical) line plotting on high contrast paper. **Accuracy:** better than 97% of indicated depth with belt motor speed at 320 rpm. **Controls:** Sensitivity control with power on-off switch. White line control with on-off switch. 0-200′, 200-400′ and 400′ to 600′ range switches. Marker pushbutton. **Transducer:** frequency, 50 kHz, ±4 kHz. **Beam Width:** 35° at 3 dB. **Cable length:** 30 ft. **Mounting:** through-hull or transom. **Chart Paper:** Size, 3⅛″ x 50′ with pre-marked depth scales. Take-up speed, approx. ¾″ per minute. **Dimensions:** less gimbal bracket, 11″ W x 8″ H x 7″ D. **Net Weight:** less transducer 6½ lbs.

This Heathkit Digital Radio Direction Finder makes navigation easier



"It has the best antenna rose of all the units tested, being of greater precision and set at an angle to facilitate easy reading."

SEA Magazine, Aug. 1977

Bring your boat into the digital age with the unique Heathkit MR-1010. Big, bright digits show you the frequency to which it's tuned. That means you can identify most AM stations without waiting for an ID — even where the band is crowded. On the beacon band, you can dial to the exact frequency you want, even if the transmitter is in its "off" cycle. And the highly sensitive receiver even zeroes in on weak stations — if it's in range, you'll hear it loud and clear.

The MR-1010 is easier to use than conventional RDFs. The displays are easy to read even in direct sunlight. And for maximum safety and convenience, they dim automatically at night. Finding your bearings is easy, too, thanks to the big azimuth ring marked in 2° increments and a generous 7-inch rod antenna. A lighted meter provides accurate null indications and a control adjusts meter sensitivity for weak or strong stations. The telescoping sense antenna eliminates 180° ambiguity. Overall, bearing accuracy is an impressive ±3°.

Versatile 2-way power options. The MR-1010 is designed to be used with your boat's 12 VDC electrical system — or it becomes completely portable with its own built-in power source consisting of 6 "D" cell flashlight batteries (not included). To prolong battery life, the digital readout display automatically shuts off after approximately 20 seconds — but can be recalled instantly at the touch of a front-panel switch.

Kit MR-1010, Shpg. wt. 14 lbs. **199.95**

MR-1010 SPECIFICATIONS — Bands: 190-410 kHz (LW); 535-1605 kHz (AM). **Sensitivity:** Typically 30 μV/m (AM); 60 μV/m (LW) for 10 dB S+N/N. **IF Frequency:** 453 kHz. **Selectivity (6 dB points):** 3 kHz (LW); 5 kHz (AM). **Readout Accuracy:** ±2 kHz. **Audio Output:** 1 watt. **Speaker:** built-in 3x5″. **Current Drain:** 450 mA (with display & meter); 110 mA (meter only); 30 mA (radio at typical listening level). **Dimensions:** 7¼″ H x 11½″ W x 12″ D.

Powerful Aircraft Navigation Computer helps you fly better!

Easy-to-use, accurate and really versatile!

$169.95 Kit Three built-in microprocessors and a multi-function display for TRUE on-board computer power!

- The most powerful low-cost Aircraft Navigation Computer available
- Built-in clock and elapsed timer for time-related computations
- Automatic fuel countdown with flashing indicator lets you know when fuel is low
- Scientific calculator functions for even more versatility
- Distance, time and ETA to checkpoint and destination
- Flight leg countdown tells you time, distance and ETA for each flight leg
- Accepts preflight data and vectors for up to nine flight legs
- Automatically computes in-flight wind, then updates all subsequent flight data including distances, times and ETA's

Heath's engineering and design excellence combine to produce an instrument that pushes ahead the state-of-the-art—a true hand-held COMPUTER that's invaluable for anyone who flies (or is learning to) and is ideal for anyone who simply appreciates real precision and quality!

The Heath OC-1401 Navigation Computer accepts preflight data and vectors for up to NINE flight legs. By single keystroke callups, it computes magnetic heading, true air speed, ground speed, time to next checkpoint, time to destination, clock time to next checkpoint, and clock time to destination. It's easier and faster to use, updates information in-flight for more current readings, and it's value-priced. You'd need an onboard computer to have more power.

The OC-1401 has a 36-key keyboard, 14-digit display, built-in clock and elapsed timer, special fuel warning indicator, "Quasi" RNAV function for heading to intermediate or non-VOR destination, and built-in diagnostic that checks to assure proper operation. It computes reciprocal headings for 180° turns and traffic pattern entry; converts statute miles to nautical miles, °F to °C, hours/minutes/seconds to decimal hours, miles to kilometers and gallons to liters and their reciprocals. Pre-flight, in-flight and navigation functions are color-coded for easy, convenient use. It also operates as a versatile scientific calculator with additional 5 level stack and 9 addressable storage locations.

Built-in rechargeable batteries allow at-home programming and memory keep-alive to airport. During flight, unit is powered by aircraft's lighter socket (14 V cord and converter included) or by optional rechargeable battery pack/carrying case with built-in charger. With comprehensive operating manual.

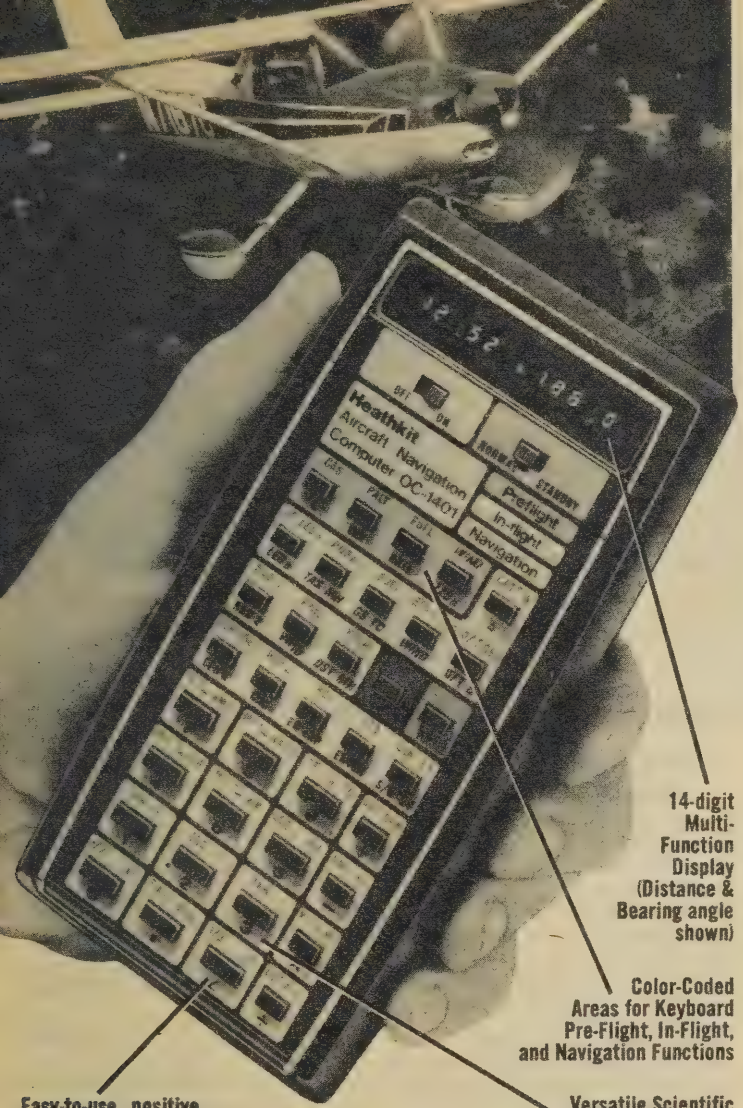
Kit OC-1401, Shpg. wt. 3 lbs. **169.95**

Factory Assembled and Tested version of above.
OCW-1401, Shpg. wt. 4 lbs. **274.95**

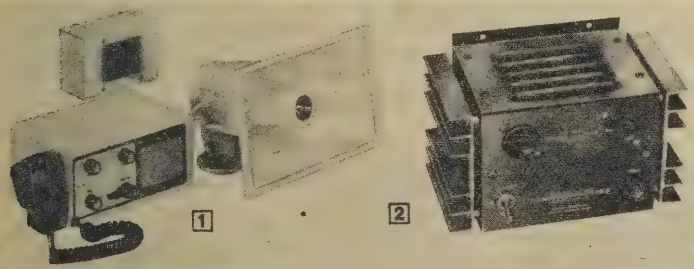
Battery Pack/Carry Case. Includes four Heavy-Duty Rechargeable Nickel Cadmium "C" Cells.
Kit OCA-1401-1, Shpg. wt. 5 lbs. **39.95**

Factory Assembled and Tested version of above.
OCW-1401-1, Shpg. wt. 5 lbs. **74.95**

The OC-1401 complies with FAA Advisory Circular No. 60-11 which describes guidelines for using Navigation Computers during airmen written tests.



Three built-in microprocessors and a real time clock give you TRUE on-board computer power!



1 Automatic Foghorn/Hailer. Features a husky 55-watt amplifier; foghorn rate and duration controls; separate "listen" & "hail" gain controls. Includes weather-resistant deck horn, 20 ft. speaker cable, gimbal mount. 12 VDC pos. or neg. ground.
Kit MD-19A, Shpg. wt. 15 lbs. **119.95**
Kit MDA-19-1, Optional remote speaker for intercom use. Shpg. wt. 2 lbs. **12.95**

2 Economy Power Inverter. Operates electric razors, lamps, other small appliances from 6 or 12-volt input. Supplies 117 VAC square wave with up to 175 watts continuous power rating. Not for high starting current or sine wave AC equipment. 25-amp fuse.
Kit MP-10, Shpg. wt. 8 lbs. **49.95**

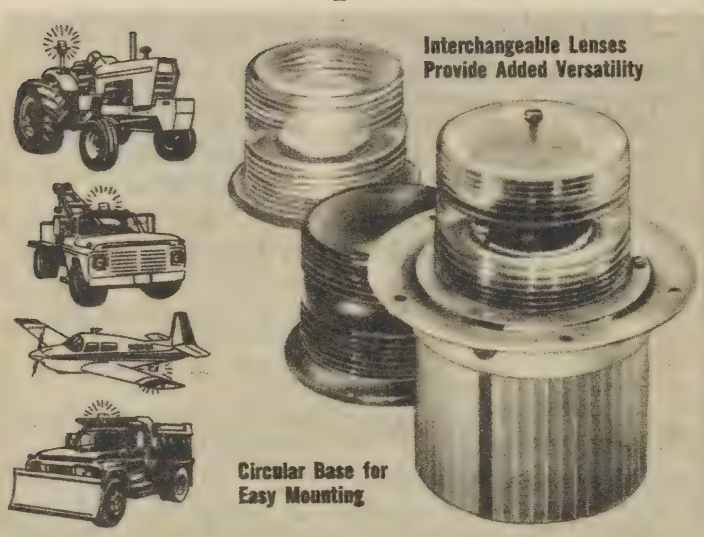
Here's how the OC-1401 measures up!

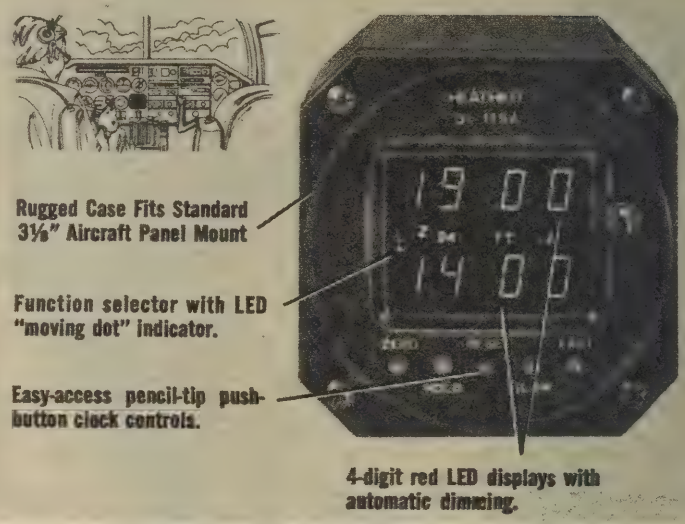
FEATURES	Heathkit OC-1401	Commodore Navigator M60*	Navtronics 16*	Texas Instruments TI-58*
Flight Leg Entries	Up to 9	1	1	1
Continuous Data Update	YES	NO	NO	NO
Built-in Clock/Timer	YES	NO	NO	NO
Fuel Warning	YES	NO	NO	NO
Built-in Diagnostic	YES	NO	NO	NO
Scientific Functions	YES	YES	NO	YES
External Program Required	NO	NO	NO	YES
Price	$169.95 (KIT)	$99.00	$197.50	$149.95

*Source of competitive information is published literature and specifications as distributed and/or advertised by manufacturers as of May, 1978.

FOR FASTEST SERVICE — USE THE HEATHKIT HOTLINE!
(616) 982-3411 day or night

Unique and Useful Electronics from Heath





Strobe Light for Aircraft/Emergency Vehicles

$79.95 **Meets Federal Air Regulation No. 23.1401 requirements for Anti-Collision Lighting**

The Heathkit OL-1155 Aircraft Strobe Light signals a truly unusual kit-form value. The OL-1155 is designed primarily as an aircraft strobe light for use as an anti-collision or supplemental beacon — and can be used as a direct replacement for standard 3¾" rotating beacons. It operates from a 12 VDC negative ground supply drawing a nominal current of 1.5 Amperes, and includes a built-in line filter. An internal adjustable trimmer lets you vary the flashing frequency from 40 to 60 flashes per minute. The OL-1155's construction manual is simple to follow.

Dozens of uses. Besides its obvious uses as an aircraft strobe light, the OL-1155 can be used in any number of other emergency applications. Mount it on your boat cabin-top or masthead for marine foul-weather anti-collision protection. Put it atop antennas, tall buildings, etc., for use as a highly visible marker light. Or, order your OL-1155 with the optional amber or red lens, below, for use in emergency vehicle applications.

Kit OL-1155, (with clear lens). Shpg. wt. 3 lbs. **79.95**

OLA-1155-2, Red lens. Shpg. wt. 1 lb. **8.95**

OLA-1155-3, Amber lens. Shpg. wt. 1 lb. **8.95**

NOTE: For the FAA PMA certification necessary for aircraft installation, return your completed OL-1155 to your local Heathkit Electronic Center or the Heath factory.

OL-1155 SPECIFICATIONS — FAA Design Approval: Under STC SA2719WE for all Cessna 182 aircraft prior to S/N 53599 & STC SA2720WE for all Cessna 210 aircraft prior to S/N 57481. **Power requirements:** 12 VDC negative ground only, 1.5A. **Dimensions:** 6" H x 3¹⁵⁄₁₆" diameter (mounting plate — 5½" diameter).

High-accuracy, low-priced Aircraft Clock/Timer

$129.95

- **FAA/PMA Approved, Meets DO-160 requirements**
- **Has GMT, local time, timer and alarm functions**

An important instrument for any pilot — gives you the accuracy and reliability you NEED for any flight timing function at about HALF-THE-COST of competitive models. All timing functions are quartz-crystal controlled for exceptional accuracy. The upper display shows 24-hour GMT/ZULU time; the lower shows local time, acts as a 24-min. timer (with minutes and seconds display), 24-hr. trip timer, and has alarm function for fuel management and check-point notification.

Both clocks run continuously but trip timer runs only when plane's master power switch is on. Displays dim automatically for night flying. Fits standard 3⅛" panel mount for easy mounting in most any aircraft.

Kit OI-1154, Shpg. wt. 3 lbs. **129.95**

Note: FAA approved for Cessna 172N, STC No. STC SA1686L (requires FAA Form 337). Field approval on FAA Form 337 required for other aircraft. Completed kit must be returned to a Heathkit Electronic Center or factory for DMIR inspection (at no additional charge), before installation by an A & P mechanic (or supervised pilot installation). Heath will also set adjustment for maximum accuracy. Meets DO-160 environmental requirements.

OI-1154 SPECIFICATIONS: Display Functions: (Top), 24 hour Zulu or GMT; (Bottom), 24 hour local, 24 minute timer (in minutes and seconds); 24 hour total trip time; 24 hour trip time alarm. **Input Voltage:** 14 VDC or 28 VDC. **Input Current:** 0.5 A max. (bright display). **Standby Current:** 0.025 A. **Crystal Oscillator Accuracy:** Typical, less than ±1 minute per month. Initial, 0.004% at 25°C. Drift ±0.003% −20°C to +65°C. Aging, 0.002% per year. **Dimensions:** 3.3" x 3.3" x 6" deep.



Transistorized Model Railroad Power Supply/Throttle for added realism

The Heathkit RP-1065 makes an HO or N-gauge layout dramatically more realistic! Just operate the slide throttle control to make your engines gradually build up speed just like a real train, at slow speeds, maintain realistic acceleration and braking.

Prevents stalling out when climbing grades, even lets you precisely simulate a real train, slowing as it climbs, then accelerating as it goes down. Helps overcome side rod and gear train binding, tight spots in wheel bearings, even tight sections of track. Easily powers two HO or N-gauge engines — has built-in short protection with an indicator light and a time delay to prevent false triggering.

The RP-1065 goes together in just a couple of evenings, even if it's your first kit. There's just one circuit board to wire, and a plug-in IC simplifies assembly. Operates on 120 VAC. 4¾" x 9½" x 8½".

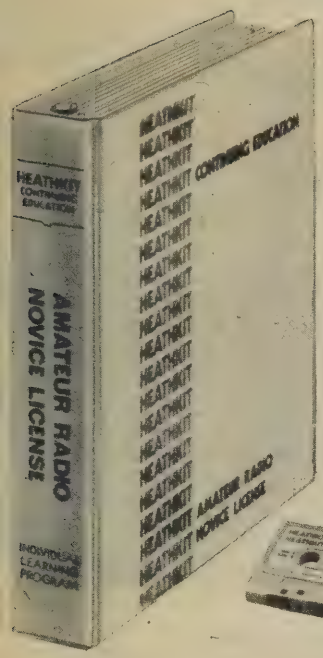
Kit RP-1065, Shpg. wt. 9 lbs. **79.95**

Kit RPA-1065-1, Remote Control for RP-1065. 3 lbs. **22.95**

RPA-1065-2, 10-ft. Extension Cable. 2 lbs. **7.95**

RPS-1065, RP-1065 and RPA-1065 Together. 19 lbs. **99.95**

Amateur Radio Novice License Program



From Heath — world leader in Amateur Radio Equipment — a self-instruction program guaranteed to help you get your Novice ticket! In fact, it's so effective that if you fail to pass your FCC exam after completing the material — we'll REFUND your money for the program material.



There's no better way to get your license. We guarantee it!

Now — for CB'ers, electronic hobbyists, anyone interested in operating worldwide two-way Amateur Radio Equipment — Heath makes it easier than ever! This deluxe program prepares you for the Amateur Radio Novice FCC exam, and provides you with helpful guidelines for setting up and operating your own station once you pass the exam. Covers rules and regulations, radio phenomena, operating procedures, emission characteristics, electrical principles, circuit components, practical circuits, antennas and transmission lines and radio communications practices.

Helpful station operating aids include a wall-size frequency spectrum chart and a call area map of the United States, a glossary of common abbreviations, twelve most common Q signals, instructions for making your own antenna, lots more! The program includes a programmed text and two audio cassettes to personalize and reinforce the text material.

Program ER-3701, Shpg. wt. 7 lbs. **29.95**

ECP-3801, Cassette Recorder, Shpg. wt. 4 lbs. **60.00**

Amateur Radio is a Truly Exciting Hobby — and Heath is the way to start and stay with it!

Amateur Radio is a hobby everyone can enjoy. It provides you with worldwide two-way radio communications right from your home, car or boat. Every time you "work" your equipment, transmitting and receiving, it's a new, exciting adventure. You make friends from different countries and cultures, enjoy working and experimenting with electronic equipment, develop your technical and mechanical skills. It's also a practical and convenient means of local two-way communications — keep in touch with other Amateurs right in your area for community news and information.

It's easy to become an Amateur too. An elementary knowledge of radio theory, operating procedures, and code is all that's required. Passing a simple exam administered by the FCC gets you your license. And a low-cost transceiver (like our HW-8, page 20) gets you operating. In fact, the FCC has recently taken steps to make Amateur radio licenses even easier to get. The code test has been simplified for the novice ticket, there is no longer any fee, and tests are administered by mail.

Naturally, we think starting and pursuing your hobby with Heathkit equipment is the best way to do it. That's because our complete line of Amateur Radio equipment can provide everything you need, from a basic Code Practice Oscillator all the way to a sophisticated station. It's easy and fun-to-build, you learn about circuitry and operation as you put your equipment together, and you'll probably save money over comparable assembled units.



Heathkit HD-1416 Code Practice Oscillator

$9.95 **The low-cost, FUN way to learn Code!**

Recommended for ER-3701 Amateur radio course above! The unit operates from a single inexpensive 9-volt transistor battery (not supplied) and comes complete with telegraph key and phone jack. Has built-in speaker, volume and adjustable internal tone control. Once you get your license, the HD-1416 can serve as a sidetone oscillator for any transmitter using grid block keying.

Kit HD-1416, Shpg. wt. 2 lbs. **9.95**

HD-1416 SPECIFICATIONS: Mode of Operation: Speaker or headphones. **Tone Frequency:** 200-800 Hz adjustable. **Battery Required:** 9-volt transistor battery equivalent Neda #1604 (not supplied). **Headphones:** 8-2000 ohms. **Dimensions:** 2⅝" H x 4⅛" W x 4⅜" D.



SAVE $4.95 When You Order the Program and Code Oscillator Together

Here's an ideal combination to help you get your ticket. Our Code Practice Oscillator described at left and our program described above will get you operating fast and easy. And we even include a **Bonus Gift Certificate good for 10% off (up to $10) on any Heathkit Amateur Radio Equipment.** Simply enclose a copy of your license and proof of ERS-3701 purchase within 90 days of licensing. $39.90 if purchased separately.

ERS-3701, Shpg. wt. 8 lbs. **34.95**



HR-1680 High-performance SSB/CW Receiver

$199.95

- **Excellent sensitivity**
- **No-instrument alignment**
- **Operates from 12 VDC or built in AC supply**

7 EVENING KIT
Fast, Easy Assembly

Novice kitbuilders will really appreciate the HR-1680's open chassis layout and easy-to-follow step-by-step assembly.

Heath's HR-1680 is an excellent choice for your first receiver. It covers 80, 40, 20, 15, and the lower 1 MHz of the 10 meter band and features a preselector tuned dual-conversion front end. Less than 0.5 μV gives you a 10 dB signal plus noise over noise ratio and a 4-pole crystal filter and MOSFET amplifier gives the IF section excellent selectivity and gain. Both RF and IF stages are AGC controlled to prevent fading and blasting. In addition, the HR-1680 features individual crystal heterodyne oscillators for excellent stability, solid-state diode bandswitching, built-in 100 kHz calibrator for precise calibration and alignment, and switchable wide/narrow active audio circuitry for SSB or CW operation.

Assembly is simplified with only four circuit boards to construct and a rugged chassis minimizes heating and insures long lasting precision and stability. Operates from 12 VDC or internal AC supply. Can be aligned without external instruments.

Kit HR-1680, Shpg. wt. 14 lbs. **199.95**
HS-1661, Matching Speaker. 5 lbs. **22.95**

HR-1680 SPECIFICATIONS: Frequency Coverage (MHz): 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-28.5, 28.5-29.0. **Sensitivity:** Less than 0.5 μV for 10 dB S+N/N for SSB operation. **IF Selectivity:** 2.1 kHz minimum at 6 dB down, 7 kHz maximum at 60 dB down. **Audio Output Power:** 1.2 watts into a 4-ohm load at less than 10% THD. **AGC Characteristic:** Blocking level, 3 volts. Dynamic range, 120 dB. Time Constant, attack time less than 1 mS. Release time switch selectable at 100 μS (CW) or 1 second (SSB). **Intermodulation Distortion:** −60 dB. **Image Rejection:** 50 dB or better. **IF Rejection:** 60 dB or better. **Internally Generated Spurious Signals:** Below 1 μV equivalent antenna input except at 3.74, 21.2, 28.6 and 28.9 MHz. **Frequency Stability:** Less than 100 Hz per hour drift after 30 minutes warmup. Less than 100 Hz drift for 10% change in line voltage. **Tuning Rate:** Approx. 15 kHz per turn. **Dial Accuracy:** Within 2 kHz after calibration at nearest 100 kHz marker. **Dial Backlash:** 50 Hz or less. **Antenna Input Impedance:** 50 ohms unbalanced. **Temperature Range:** −10°C to +50°C. **Meter Calibration:** 0 to S-9 + 60 dB. **Power Requirement:** 120 or 240 volts AC (60/50 Hz) 27 watts maximum or 11.5 VDC to 15 VDC at 0.75 amperes maximum. **Dimensions:** 12¾" W x 6¾" H x 12" D. **Net Weight:** 9¾ lbs.

Unique and Useful Accessories for your Amateur Radio Station



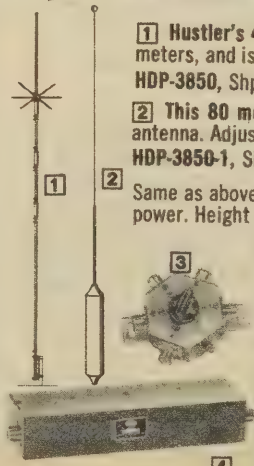
Heathkit MICODER™ II Mike/Auto Patch

An excellent way to avoid the inconvenience and clutter of an "outboard" tone encoder is to install the new Heath HD-1984. On one side of this neat hand held package you'll find an electret condenser microphone of superior quality. Flip it over and the HD-1984's built-in keyboard is ready to give you instant auto-patch access.

The microphone section features excellent audio characteristics and its 300-3000 Hz response is tailored for clean voice transmission. Encoder circuitry features single chip, crystal referenced, tone generation, Zener diode voltage regulation and excellent overall accuracy and stability.

The Micoder is completely self-contained and operates from its own 9-volt battery (not supplied). Comes complete with 6 foot coiled microphone cable and hanger clip. Easy single-step NO-INSTRUMENT alignment! Can be used with any high-impedance mike input. 3¾" H x 2⅝" W x 1¾" D.

Kit HD-1984, Shpg. wt. 1 lb. **34.95**



1 Hustler's 4-BTV vertical uses a single 50Ω feedline, covers 10-40 meters, and is rated at full legal power on SSB & CW.

HDP-3850, Shpg. wt. 15 lbs. **89.95**

2 This 80 meter trap for the 4-BTV installs directly on top of the antenna. Adjustable between 3750-4000 kHz. Full legal power.

HDP-3850-1, Shpg. wt. 3 lbs. **29.95**

Same as above except only covers 3500 to 3750 kHz. Takes full legal power. Height 42½". Not shown. **HDP-3850-2,** Shpg. wt. 2 lbs., **29.95**

3 Heath's HD-1234 coax switch switches up to 4 different antennas. Handles up to 2 kW PEP, grounds all outputs not in use, and has an operating range to 250 MHz. 50 ohms impedance.

Kit HD-1234, Shpg. wt. 1 lb. **10.95**

4 Solve TVI problems with this rugged low-pass filter. Provides a minimum of 70 dB attenuation and cutoff frequency is 34 MHz. For 10-160 meters. 50 ohms. Full legal power.

HDP-3700, Shpg. wt. 2 lbs. **29.95**

Reliable, Money-Saving Accessories from Heath

Add more versatility to transceivers and separates with these handy, low-cost accessories

Heathkit solid-state Dip Meter delivers more performance at big savings

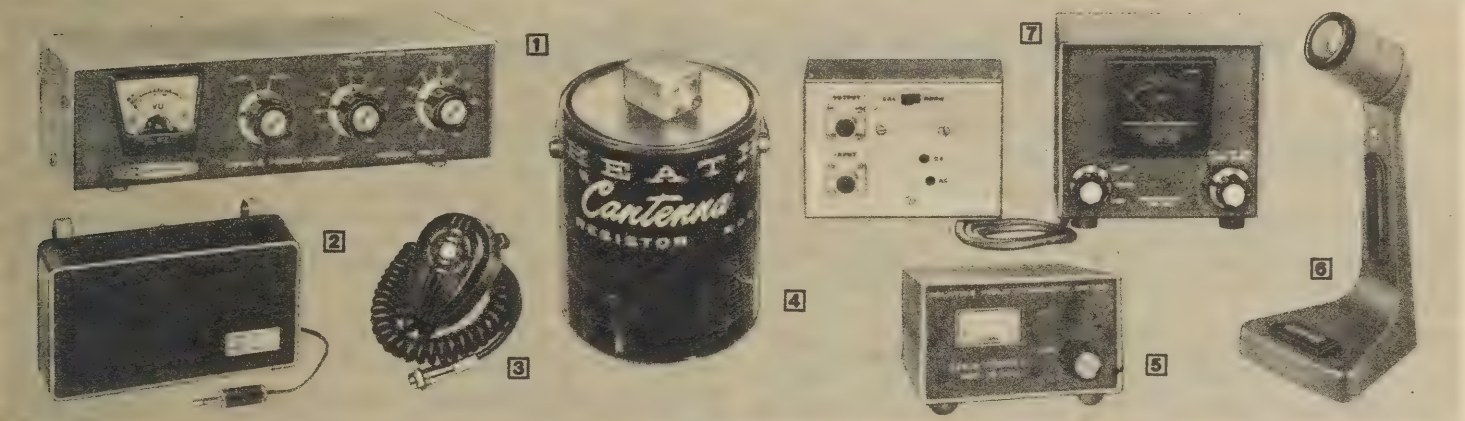


Another Heath value triumph — a better dip meter at lower cost. The Colpitts oscillator covers 1.6 to 250 MHz in fundamentals with a MOSFET paraphase amplifier and hot-carrier diodes for more sensitivity and a better dip. It uses a Q-multiplier for greater detector sensitivity and a responsive 150 μA meter movement for positive resonance indications. It includes a phone jack for modulation monitoring. It's smaller and lighter than others, too. Completely portable.

Whether you're checking resonant frequencies, adjusting traps, looking for parasitics, or using it as a signal generator, the HD-1250 is designed to go anywhere. It fits your hand and thanks to its solid-state design and 9-volt battery operation, it's ready to use instantly wherever you are. The custom molded gray carrying case protects the meter and the 7 color-coded, pre-adjusted, plug-in coils in transit, and makes a handy storage place.

The kitbuilding is really easy too, usually just a single evening. Nearly everything mounts on two circuit boards and there's minimal point-to-point wiring. And when you finish, you'll have the best dip meter around — for a lot less money.

Kit HD-1250, less battery, Shpg. wt. 4 lbs. **59.95**



1 Heathkit Hybrid Phone Patch. Add the versatility of phone patch capability to your shack with Heath's HD-15. Individual receiver/transmitter line gain controls simplify adjustment and the HD-15's VU meter continuously monitors the unit's output. Interfacing with your system is a simple matter. Matches 3-16 ohm speakers and hi-Z or 600 ohm inputs. PTT operation. 2⅝" H x 9¼" W x 3⅝" D.

Kit HD-15, Shpg. wt. 3 lbs. **37.95**

2 HDP-1228 Portable Twin Speaker. The HDP-1228 plugs directly into the external speaker jack of most transceivers, tape players, etc. It's ideal for visor mounting to overcome road and traffic noise, and it can be quickly unplugged and removed from the vehicle for theft protection. Constructed of tough, lightweight plastic. 5¾" W x 3¼" H x 1¼" D. Fully assembled.

HDP-1228, Shpg. wt. 1 lb. **9.95**

3 Fully assembled Heathkit Mobile PTT Mike. For QSOs on the road you can't beat the GH-12A hand-held from Heath! The mike features a high impedance piezo-ceramic element, with 100 to 5000 Hz response, that's tailored for single sideband operation. Can be wired for PTT or both PTT and VOX operation. Comes complete with cable and mounting clip. Connector not included.

GH-12A, Shpg. wt. 1 lb. **14.95**

4 Heath's Original "Cantenna". Use the "Cantenna" to avoid unnecessary interference during tune ups or install it on your bench. It's the ideal load for transmitter maintenance and alignment, and it's light enough for easy field portability. Handles up to 1 kW of RF with VSWRs of less than 1.5:1 to 300 MHz and less than 2:1 to 400 MHz. 50 ohm impedance. Oil filled (oil not included).

Kit HN-31, Shpg. wt. 3 lbs. **17.95**

5 Field Strength Meter for fast adjustments. Makes transmitter adjustments quicker and more precise. Operates anywhere in the 1.8 to 250 MHz spectrum and is an ideal companion for your HW-8. 2⅝" H x 4⅛" W x 4⅜" D.

Kit HD-1426, Shpg. wt. 2 lbs. **11.95**

6 Fully assembled Heathkit Desk Mike. This Hi-Z dynamic microphone features 70-10,000 Hz response, VOX and grip-to-talk operation, and its rugged die-cast case, finished in grey and satin chrome, makes the HDP-121A the centerpiece at any operating position. The PTT switch can be mounted on the base or handle of the microphone. Includes cables.

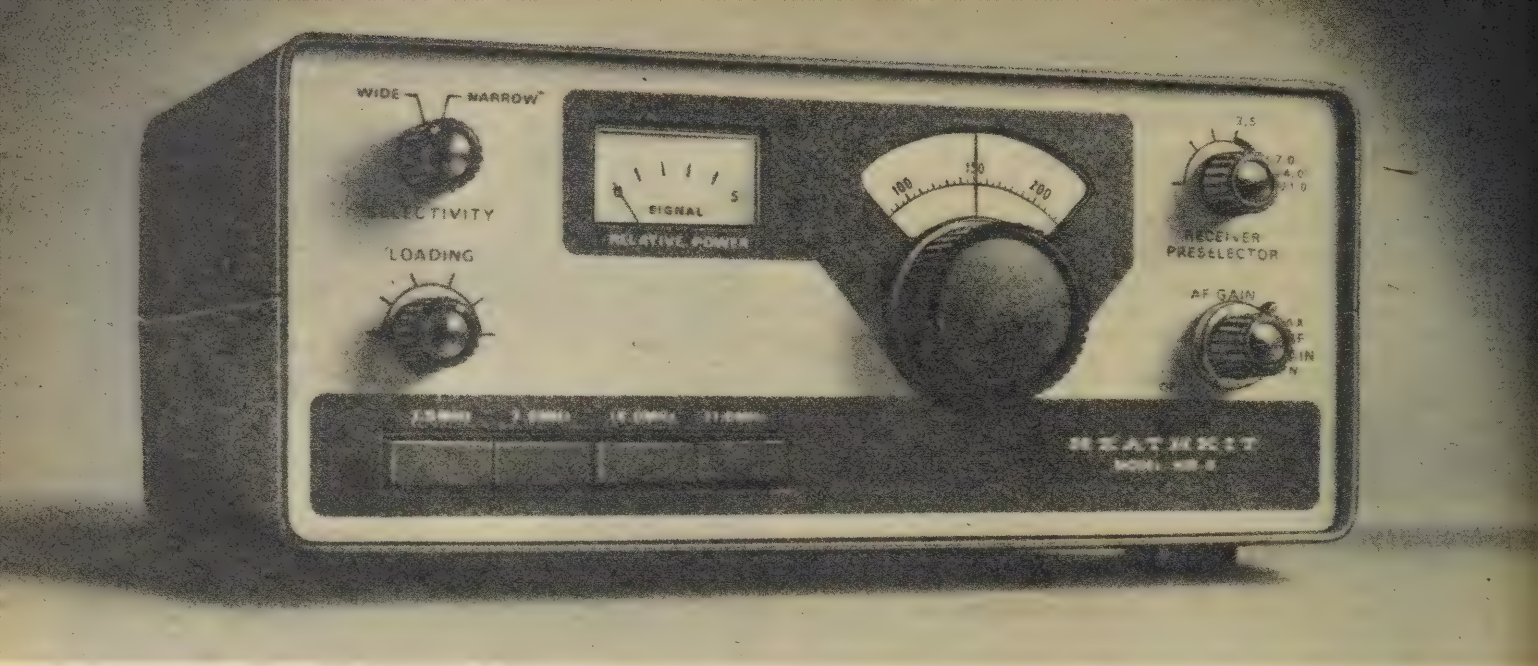
HDP-121A, Shpg. wt. 4 lbs. **44.95**

7 Heath HM-102 HF Wattmeter/SWR Bridge. This rugged in-line Wattmeter/SWR Bridge features dual power/SWR scales, easy calibration, and extra long interconnect cable to allow you to position the meter up to six feet from the detector/bridge. Operates over the 1.8 to 30 MHz range with minimal insertion loss and a nominal impedance of 50 ohms.

Kit HM-102, Shpg. wt. 3 lbs. **37.95**

HM-102 SPECIFICATIONS: Frequency Range: 1.8 to 30 MHz. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Capability:** 10 to 2000 watts. **SWR Sensitivity:** Less than 10 watts. **Impedance:** 50 ohm nominal. **Connectors:** UHF type SO-239. **Dimensions:** 5⅛" H x 2¼" W x 6½" D.

Kit HM-2102 (not shown), As above, 50-160 MHz range. (6 or 2 meters). Shpg. wt. 4 lbs. **37.95**



HW-8 -- It works the world on a couple of watts!

$129.95

- **0.2 μV gives you readable signals**
- **4 Band CW Operation**
- **Front panel Relative Power Meter**

When was the last time you worked the coast, snagged YV or exchanged reports with a DJ6...all with just three watts in? If you've never tried it, you're in for some real excitement and challenge. It takes a good rig though, one with excellent performance and specifications, and probably the best QRP rig going is Heath's HW-8.

Look at the receiver. As little as 0.2 microvolts in at the antenna terminal gives you a readable signal. Hum and microphonics are minimal. Couple that with a tunable preselector, direct conversion with RF amplification, a balanced product detector followed by active audio processing, and you've got a hot little receiver that's going to dig in and dig out the stations you're chasing!

The transmit section's the same story...performance! You'll get a minimum of watts in 80 through 20 and 2.5 in on 15. Each band is individually selected and crystal controlled hetrodyne circuitry insures accurate frequency mixing. The HW-8's VFO features an MPF-105 FET in a temperature compensated Hartley configuration. This design approach provides overall stability and covers the unit's 3.5-3.75; 7.0-7.25; 14.0-14.25; and 21.0-21.25 MHz operating ranges with excellent accuracy.

Operating convenience wasn't forgotten either. The HW-8 features an RF and AF gain control, solid state band switching and semi break-in CW operation including adjustable T/R delay. Operate your HW-8 from its optional AC supply or take it to the mountain top and run on batteries.

The HW-8 is an easy and enjoyable kit to build, too, most parts mount on a single printed circuit board, and there's minimum point to point wiring. Now's the time to get into the fun and excitement of low-power CW operation. Order your HW-8 today!

Kit HW-8, Shpg. wt. 6 lbs. **129.95**

Kit HWA-7-1, AC Power Supply. Operates your HW-8 from standard 117 VAC house current. Ideal for fixed station use. Shpg. wt. 4 lbs. **15.95**

HW-8 SPECIFICATIONS: TRANSMITTER — DC Power Input: 3.5 watts (80 M); 3.0 watts (40 M); 3.0 watts (20 M); 2.5 watts (15 M). **Frequency Control:** built-in VFO. **Frequency Stability:** Less than 150 Hz/hour drift after 60 minute warm-up. **Output Impedance:** 50Ω, unbalanced. **Spurious & Harmonic Levels:** —35 dB or better. **Offset Frequency:** approx. —750 Hz, fixed on all bands. **RECEIVER — Sensitivity:** 0.2 μV for readable signal; 1 μV or less for 10 dB S+N/N. **Selectivity:** wide, —750 Hz @ —6 dB narrow, —375 Hz @ —6 dB. **Audio Output Impedance:** 1000Ω, nominal. **GENERAL — Frequency Coverage:** 3.5-3.75 (80 M); 7-7.25 (40 M); 14-14.25 (20 M); 21-21.25 MHz (15 M). **Frequency Stability:** less than 100 Hz/hour drift after 30 min. warmup. **Power Requirement:** 12-16 VDC, 90 mA, receive; 430 mA, transmit. **Dimensions:** 9¼" x 8½" x 4¼". **Net Weight:** 4 lbs.



Improve your CW sending with this solid-state Electronic Code Keyer

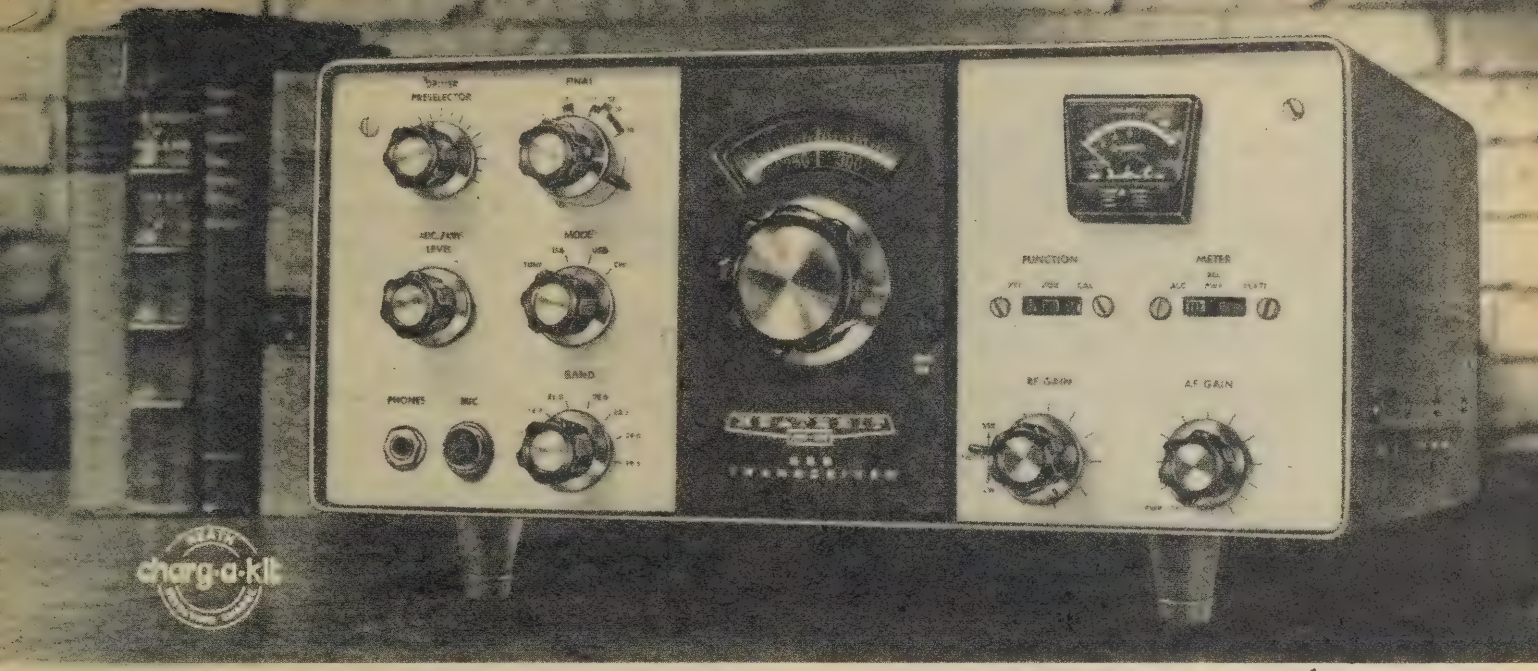
$49.95

- **Selectable 10-35 or 10-60 wpm**
- **Adjustable paddle travel and tension**
- **Operates 120 VAC or 12 VDC**
- **Weighted cabinet for stability**

Sending code's easy with the HD-1410 whether you're operating base or portable. The dot and dash paddles travel and tension are easily adjustable. When the two paddles are treated as one, the HD-1410 operates like a single-paddle keyer with dot and dash memories. Iambic operation forms most characters with reduced wrist movement. Dots and dashes are self-completing and always in proper proportion. During construction, you select the speed range you want — 10 to 35 words per minute or 10 to 60 words per minute. Operates on 120 VAC or 12 VDC. Adjustable sidetone frequency, built-in speaker, headphone jack. Styled to match our famous "SB" line.

A special weighted cabinet helps keep the HD-1410 stable to prevent sliding or fumbling. Its low-profile styling and compact size let you use it with most any rig without blocking other knobs and controls.

Kit HD-1410, Shpg. wt. 4 lbs. **49.95**



HW-101...Lets You Explore the World on a Budget

$369.95 **The unbeatable price/performance leader in SSB Transceivers**

The Heath HW-101 gives you full coverage 10 through 80 meter operation at a price that's unbeatable! It's an excellent first rig for the Novice, yet you'll find it packed with the features and performance that every Ham will appreciate.

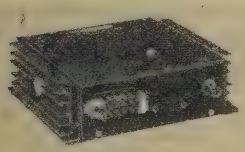
Look over its clean front panel styling...power up, flip the mode switch. Instantly you've got your choice of USB, LSB, or CW operation. Key the transmitter, VOX or PTT, and you command a high performance pair of 6146s that'll pump a clean 180 watts PEP in on phone or 170 watts in on CW. Spin the massive main tuning knob and a solid 36:1 Jackson drive opens the bands and lets you explore with ease. Up on 15 make the HW-101's fantastic 0.35 μV sensitivity work for you. While on 80 and 40 you'll rapidly come to appreciate the 101's crystal IF filtering as it cuts away the QRM and lets you enjoy your QSOs. And if you've got a "sked" to make, with a net or your pal, switch in the 100 kHz calibrator and let it put your HW-101's FET VFO exactly where you want to be.

Kit assembly is easy and fast with an open chassis layout, uncrowded circuit boards and a color-coded wiring harness. Special "switch boards" with built-in wafer switches help eliminate intricate wiring to greatly simplify assembly. The HW-101, it's an unbeatable deal at an unbeatable price.

Kit HW-101, Shpg. wt. 22 lbs. **369.95**

SBA-301-2, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **34.95**

HW-101 SPECIFICATIONS: RECEIVER: Sensitivity: <0.35 μV for 10 dB S+N/N for SSB operation. **SSB selectivity:** 2.1 kHz min. @ 6 dB down; 7 kHz max. @ 60 dB down; (3.395 MHz filter). **CW selectivity:** (optional SBA-301-2 CW crystal filter); 400 Hz min. @ 6 dB down; 2.0 kHz max. @ 60 dB down. **Output impedance:** 8 ohm speaker, and high impedance headphone. **Power output:** 2 watts with <10% distortion. **Spurious response:** Image and IF rejection >50 dB. **TRANSMITTER: DC power input:** SSB 180 watt PEP (normal voice, continuous duty cycle). CW 170 watts (50% duty cycle). **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohm to 75 ohm with <2:1 SWR. **Oscillator feed-through or mixer products:** 45 dB below rated output. **Harmonic radiation:** 40 dB below rated output. **Transmit-receive operation: SSB:** PTT or VOX. **CW:** Provided by operating VOX from a keyed tone, using grid-block keying. **CW sidetone:** Internally switched to speaker or headphone in CW mode. Approx. 1000 Hz tone. **Microphone input:** High impedance with a rating of −45 to −55 dB. **Carrier suppression:** 45 dB down from single-tone output. **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB from two-tone output. **RF compression (TALC*):** >10 dB at 0.1 mA final grid current. **GENERAL: Frequency coverage:** 80-10 M amateur bands. **Frequency stability:** <100 hertz per hour drift after 45 minutes warmup from normal ambient conditions. <100 Hz for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial calibration:** 5 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2460 Hz. **Power requirements:** 700 to 850 volts at 250 mA with 1% maximum ripple; 300 volts at 150 mA with 0.05% maximum ripple; −115 volts at 10 mA with 0.5% maximum ripple; 12 volts AC/DC at 4.76 amps. (see fixed & mobile power supplies below). **Cabinet dimensions:** 6⅜" H x 14¼" W x 13⅜" D.
*Triple Action Level Control.

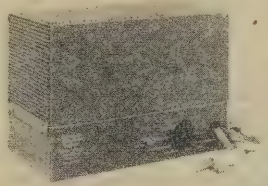


Heathkit HP-13B Mobile Power Supply to put your HW-101 on the road

This Power Supply gives you all the necessary operating voltages for mobile use of SSB transceivers. It has high, low and fixed bias voltages, also switches filament voltage for equipment with which it is used, features relay control of all primary power and has individual circuit breaker protection. Built to stand up to many years of rugged mobile use.

Kit HP-13B, Shpg. wt. 7 lbs. **69.95**

HP-13B SPECIFICATIONS: Input voltage: 12 to 16 VDC (neg. ground only). **Input current:** 25 amp. max. full load. **High voltage output:** 800 VDC, no load; 750 volts DC @ 250 mA. AC ripple: less than 1% @ 250 mA. **Low voltage output:** (high tap) 310 VDC, no load; 200 VDC @ 150 mA. (low tap) 265 VDC, no load; 250 VDC @ 150 mA. AC ripple: Less than .05% @ 150 mA. **Fixed bias:** −130 VDC @ 20 mA. **Dimensions:** 7¾" W x 7⅛" L x 2⅜" D. All voltages referenced at 13 VDC.



Fixed-Station AC Power Supply

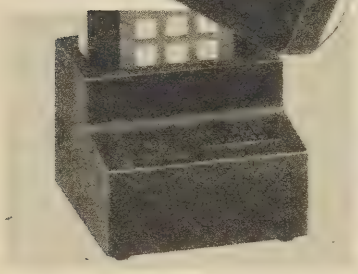
Provides the operating voltages for the HW-101 as well as those necessary for the operation of many older Heath transceivers. Has high voltage and two internally selectable low B+ taps. Also provides fixed bias and 12.6 filament voltage. The HP-23C features excellent bias supply filtering and extremely low ripple content on both high and low voltage outputs.

Kit HP-23C, Shpg. wt. 19 lbs. **57.95**

HP-23C SPECIFICATIONS: Power requirements: 120/240 VAC, 60/50 Hz, 350 watts maximum. **High voltage output:** 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple. Less than 1% @ 250 mA. **Duty cycle:** 150 mA continuous to 300 mA @ 50%. **Low voltage output:** (High tap) 350 VDC, no load; 300 VDC @ 150 mA ±10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA; ±10%. Less than 0.05% AC ripple @ 150 mA, continuous duty to 175 mA. **Fixed bias:** −130 VDC ±10%, no load; −100 VDC @ 20 mA. **Filament voltage:** 12.6 VAC @ 5.5 amps. **Dimensions:** 9" L x 4¾" W x 6¾" H.

NEW VF-2031 Hand-Held 2-Meter Transceiver





The VF-2031 drops right into the battery charger for easy, convenient recharging of the built-in nickel-cadmium batteries. The VF-2031 will operate approx. 10 hours on a full charge and can be recharged usually in 14-24 hours.



The optional leather holster-style carrying case and external PTT microphone make your VF-2031 even more convenient and versatile! Just put the VF-2031 on your belt and use the ultra-compact and lightweight coiled cord MIC to transmit. The top-mounted controls including tone accessory remain easily accessible. The carrying case attaches to your belt and the coiled cord MIC attaches to a handy clip on the case so when you're not operating, both your hands are free.

Gives you a minimum of 2 watts out for reliable two-way and repeater communications

$189.95

- **8 Channels with single crystal for each channel**
- **Simplex operation plus ± 600 kHz offsets**
- **1-watt audio output for clean, clear reception**

Two meters is the exciting place to be in Amateur Radio today, and our new VF-2031 8-channel 2-meter FM transceiver is one of the BEST ways to work it! This compact, hand-held unit gives you the features, value and versatility you simply won't find on other units in this price range!

A minimum of 2 watts out gives you plenty of power for local two-way communications or repeater access. Frequency stability is 0.005% or better for accurate signals. Spurs are down a full 60 dB, so you never have to worry about causing interference with other units or accidentally accessing repeaters. A separate built-in microphone and speaker plus well-designed FM circuitry contribute to better audio on both transmit and receive.

A single crystal controls both receive and transmit on each channel for extra versatility. The simplex/offset switch has three positions —0, +600 kHz and —600 kHz — so you have a choice of three transmit frequencies for each channel. To operate with the full capabilities of the VF-2031, simply buy eight crystals in any 2 MHz segment of the VF-2031's 143.5 to 148.5 frequency coverage (both offset crystals are supplied) and you'll have 8 receive and 24 transmit channels! That's true money-saving versatility. And with the optional auto-patch encoder (VFA-2031-3 below) you can even access telephone lines through repeaters with auto-patch input to add **telephone versatility** at remarkably low cost.

The VF-2031 includes a nickel-cadmium battery pack and 120/240 VAC battery charger. Under normal operation, the batteries will last 7 to 10 hours on a full charge. The charger will fully recharge the batteries in approx. 14-24 hours. The VF-2031 drops right into the charger compartment for easy and convenient charging. Other accessories supplied with the VF-2031 include a "rubber duckie" antenna and earphone for private listening.

The VF-2031 has volume and squelch controls, universal BNC-type output connector and 3-position simplex/offset switch. It's compact and lightweight and has a rugged, high-impact case. Compare features and specs and you'll find the VF-2031 to be one of the most versatile and value-packed 2-meter rigs around! Order yours today. Requires VTVM for alignment. Not recommended for beginning kitbuilders.

Kit VF-2031, Shpg. wt. 4 lbs. **189.95**

Fitted Holster-Style Carrying Case for VF-2031. See left for description.

VFA-2031-2, Shpg. wt. 1 lb. **17.95**

Auto-Patch Encoder. Lets you access telephone lines from repeaters with touch-tone inputs to make telephone calls.

VFA-2031-3, Shpg. wt. 1 lb. **34.95**

Crystal Certificates for VF-2031. Fill out certificate, specify crystal frequency and send to manufacturer. You receive crystal postpaid by return mail. Order one certificate for each crystal you need.

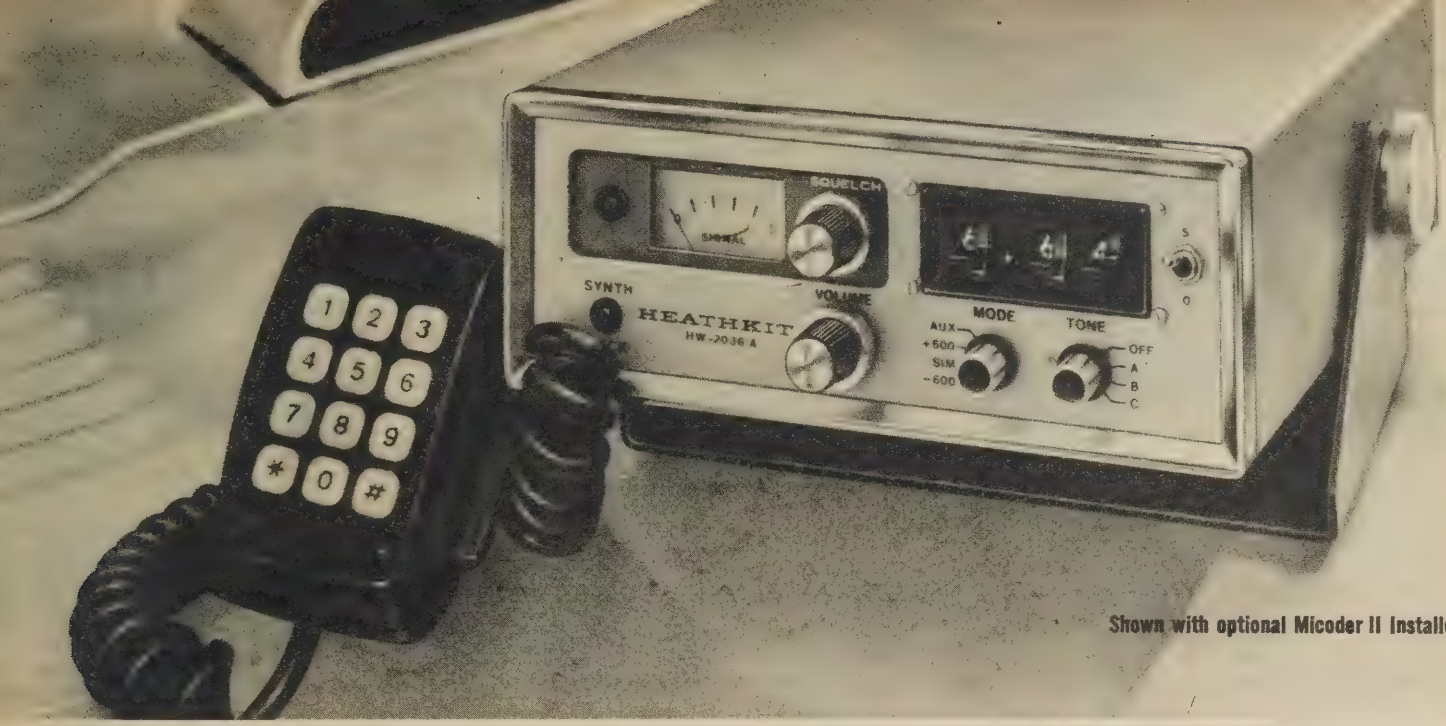
VFA-2031-4, Postpaid **6.95**

Continuous Tone Encoder. Accesses most repeaters. Builds right in to VF-2031.

VFA-2031-5, Shpg. wt. 1 lb. **34.95**

COMING SOON! External Microphone. PTT MIC with coiled cord will plug right into VF-2031 to let you transmit without removing unit from holster. Watch for it in our next Catalog.

VF-2031 SPECIFICATIONS: Receiver — Sensitivity: 0.5 μV or less for 20 dB quieting; 0.35 μV for 12 dB SINAD. **Squelch Threshold:** 0.25 μV or less. **Audio Output:** 1 watt at less than 10% THD. **Operating Frequency Stability:** 0.005% or better. **Adjacent Channel Selectivity:** 40 dB or greater. **Image Rejection:** —45 dB or greater. **IF Frequency:** 10.7 MHz. **Usable Bandwidth:** 7 kHz. **TRANSMITTER: Power Output:** 2.0 watts or more at 12.5 VDC (nominal). **Deviation:** 5 kHz (adjustable). **Spurious Output:** —60 dB or greater referenced to carrier. **Stability:** 0.005% or better. **Oscillator Frequency:** approx. 15 MHz. **Multiplication Factor:** x9. **Type of Modulation:** Frequency. **Transmitter Offsets:** 0 (simplex), —600 kHz, +600 kHz with crystals supplied. **GENERAL: Frequency Coverage:** 143.5 to 148.5 MHz (unit will meet specs ±1 MHz from the alignment frequency within this range). **Operating Voltage:** 12.5 VDC nominal. **Antenna Impedance:** 50 ohms. **Speaker Impedance:** 8 ohms. **Size (Overall):** 9⅛" H x 3 5/16" W x 1⅞" D. **Transceiver Weight:** Including batteries: 2 lbs.



Shown with optional Micoder II Installed

HW-2036A-The Standard for Mobile 2-Meter Transceivers

$269.95 with standard microphone

- True digital frequency synthesis
- 0.5 μV receiver sensitivity
- 8-pole crystal IF filter

Two meters gets more exciting every day. With more and more mobile activity, autopatching, hidden transmitter hunts, fantastic band openings, and newer more sophisticated repeater operations, you'll be missing out on a whole lot of fun and some really great conversations if you're stuck with a transceiver that just can't take another crystal pair.

With Heath's HW-2036A in your car or station you haven't got a problem. You're ready for all the action because the 2036A's phase locked synthesizer/VCO loop lets you operate on any 4 MHz segment of the transceiver's 143.5 to 148.5 MHz operating range...with just the flip of a switch. That's right! When you want to QSY all you do is flip the convenient front panel lever switches and in less than the blink of an eye the synthesizer does the rest. With the HW-2036A you have your choice of simplex or standard ±600 kHz split operation. Or pick your own offset (1 MHz maximum) in the unit's auxiliary position.

The synthesizer is locked to a precision 10 MHz time base for outstanding accuracy, has crystal controlled offsets, IC divide chain, and a unique NAND gate logic system which displays locked/unlocked status and inhibits out of band transmissions by preventing transmitter key up.

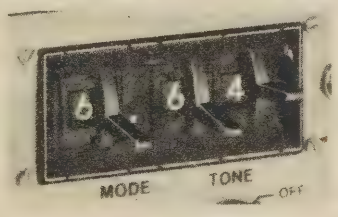
The receiver features a double tuned front end with MOSFET RF amplification, dual-conversion, 8-pole crystal IF filtering for perfect bandpass shaping and outstanding adjacent channel selectivity, IC limiting, Quad detection, and excellent audio quality. Schmitt-trigger circuitry insures squelch action that's quick and sure, a front panel LED display alerts you instantly to channel activity, and just 0.5 microvolts in gives your HW-2036A up to 15 dB of quieting!

The HW-2036A's transmitter gives you a minimum of ten watts out. Signals are clean and harmonic and spurious components are 60 dB down within 20 MHz of carrier reference. Transmit audio quality is outstanding and deviation is continuously adjustable to 7.5 kHz maximum.

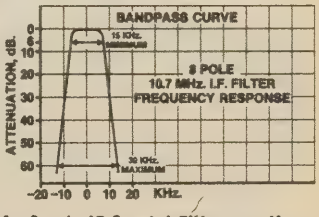
The HW-2036A also features sub-audible tone encoding (variable from 70 to 200 Hz), built in 5 and 11 VDC regulators, hash filter/regulator to eliminate ignition noise and alternator whine, and diode protection to prevent damage from connection to incorrect voltage polarity. Comes with gimbal-mount for mobile operation and may be ordered with the standard mike or you can add $20 and get it with our Reg. $34.95 Micoder II for auto-patch operation.

Kit HW-2036A-1, with reg. $34.95 Micoder II. Shpg. wt. 12 lbs. **289.95**

Kit HW-2036A-2, with standard PTT mike. Shpg. wt. 12 lbs. **269.95**



Front Panel Lever Switches Select Any Frequency in Any 4 MHz Segment of the HW-2036A's 143.5 to 148.5 Operating Range.



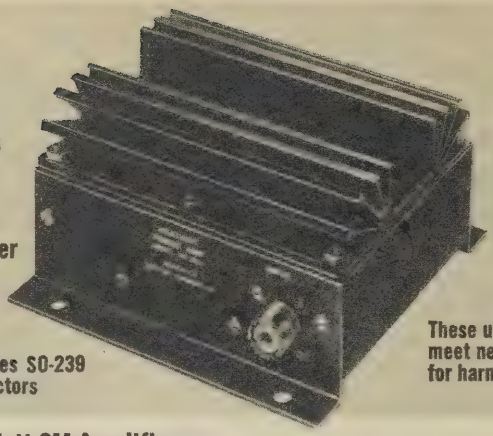
An 8-pole IF Crystal Filter greatly reduces Adjacent Channel Interference for Clear, Static-Free Transmission and Reception.

HW-2036A SPECIFICATIONS: Receiver: Sensitivity: 0.5 μV for 12 dB SINAD (or 15 dB of Quieting). **Squelch Threshold:** 0.3 μV or less. **Audio Output:** 1.5 watts at 10% T.H.D. typically 2 watts. (5 kHz deviation). **Image Rejection:** −45 dB or greater. **Spurious Rejection:** −50 dB or greater. **IF Rejection:** −80 dB or greater. **Internally Generated Spurious:** Below 1 μV equivalent. **Bandwidth:** 6 dB at 15 kHz min. and 60 dB at 30 kHz max. **Modulation Acceptance:** 7.5 kHz, min. **Transmitter: Power Output:** 10 watts min. at 25°C and 13.8 VDC, into a 50 Ω load. **Harmonic & Spurious Output:** −60 dB. **Modulation:** FM, 0 to 7.5 kHz, adjustable. **Duty Cycle:** 100% with infinite VSWR. **Tone Encoder:** 3 tones, 70 to 200 Hz, approx. ±700 Hz deviation. **Transmitter Offset:** 0 (simplex), −600 kHz, +600 kHz with crystals supplied. Provision for one additional offset crystal. Maximum offset 1 MHz. **General: Frequency Coverage:** Any 4 MHz segment from 143.5 to 148.5 MHz. (Both receiver and transmitter must be aligned for the same 4 MHz segment.) **Frequency Increments:** 5 kHz. **Frequency Stability:** ±0.0015%. **Operating Temperature Range:** 15° to 125° F. (−10° to 50° C). **Operating Voltage Range:** 12.6 to 16 VDC (13.8 VDC nominal). **Current Consumption: RX:** 700 mA max. squelched. **TX:** 2.6 A max. at 13.8 volts. **Dimensions:** 2¾" high x 8¼" wide x 9⅞" deep. **Weight:** 6.25 lbs.

4 MHz of Synthesized Performance

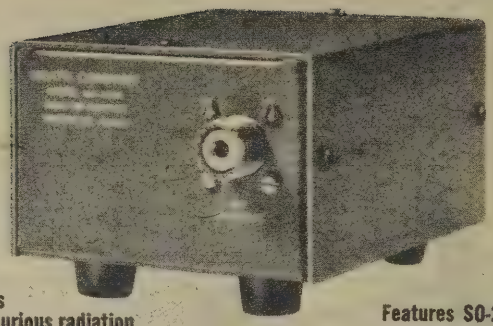
The HW-2036A 2-meter transceiver has the same exciting features and specifications as the industry leading HW-2036...with one very important difference. Our new 2036A offers a full 4 MHz of synthesized operation over any portion of its 143.5 to 148.5 MHz range. And because of this significant improvement, you'll be enjoying additional performance and flexibility without the time consuming necessity of VCO retuning. Best of all, we've done it all at the same low price that made the HW-2036 such a value leader.

Add extra punch to any 2M transceiver



Features SO-239 connectors

These units meet new FCC specs for harmonic and spurious radiation



Get more power from your handheld transceiver

Features SO-239 connectors

Heathkit 40 Watt 2M Amplifier

Delivers solid 40W minimum for 10 watts in. Draw just 7A max. from your car battery. Has antenna changeover relay and sensing circuitry for completely automatic T/R switching, tuned input/output circuits provide low spurious radiation. Special emitter ballasted configuration — withstands VSWR's of up to 3:1. Covers any 1.5 MHz portion of the 143-149 MHz band. Final alignment requires VTVM, wattmeter or SWR bridge. Mounts just about anywhere. Now with SO-239 connectors for easy hookup!

Kit HA-202A, Shpg. wt. 4 lbs. **59.95**

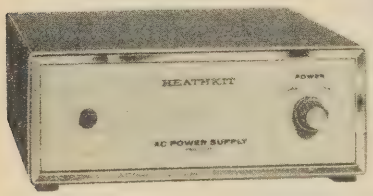
HA-202A SPECIFICATIONS: Power Output: 20W @ 5W in. 30W @ 7.5W in. 40W @ 10W in. 50W @ 15W in. **Impedance:** 50 ohms nom. **Power Requirement:** 12-16 VDC, 7 A max. **Dimensions:** 3" H x 4¼" W x 5½" D.

2M Amplifier for Handhelds

For anyone who wants extra output at low cost, the HA-201A delivers up to 10 watts for a 1½ watt input, 8 watts for a 1 watt input — ideal for use with any low-power 2-meter transceiver. Features fully automatic operation, solid-state transmit/receive switching, tuned input and output for maximum efficiency and reduced spurious emissions. **Withstands infinite VSWR load without failure.** Includes dummy load and RF detector. Easy 1 to 2 hour assembly. VTVM needed for tuneup. 12-16 VDC. Now with SO-239 connectors for easy hookup!

Kit HA-201A, Shpg. wt. 2 lbs. **34.95**

HA-201A SPECIFICATIONS: Power Output: (at 13.6 VDC input): 8 W @ 1 W in; 10 W @ 1.5 W in. **Power Input (rf drive):** 1-3 W. **Input/Output Impedance:** 50 ohms. **Power Requirement:** 12-16 VDC, 2.2 A maximum. **Dimensions:** 5⅛" L x 3⅝" W x 2¾" H.

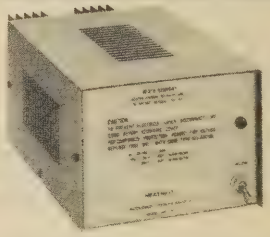


AC Power Supply for HW-2036A

Supplies the necessary voltage and current to power your HW-2036A 2-meter transceiver from a standard AC outlet for base station operation. Has 120/240 VAC wiring options, fused overload protection. With all cables for easy hookup and 3-wire line cord. Compact metal case.

Kit HWA-2036-3, 7 lbs. **37.95**

HWA-2036-3 SPECIFICATIONS: Output Voltage: 13.8 VDC regulated (Adjustable internally from approx. 10 to 15 VDC). **Output Current:** 2.7 amps, intermittent, 20 minutes max. (1.8 amps continuous). **Dimensions:** 3" H x 7¼" W x 10" D (including switch and feet).



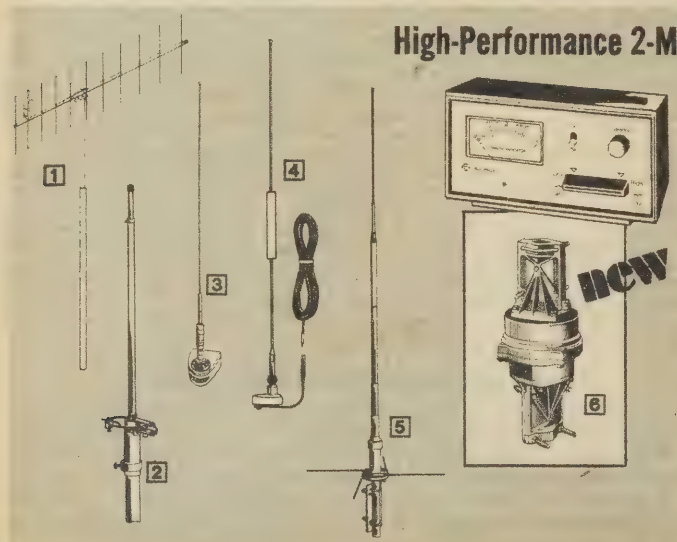
Accessory Power Supply for HW-2036A and HA-202A

The HP-1175 supplies the necessary voltage and current to power the HW-2036A and HA-202A 2-meter amplifiers from standard 120 VAC or 240 VAC outlets for base station operation. Has 120/240 VAC wiring options, fused overload protection. With cables and 3-wire line cord.

Kit HP-1175, Shpg. wt. 15 lbs. **59.95**

HP-1175 SPECIFICATIONS: Output Voltage: 13.8 VDC regulated (internally adjustable from approx. 12 to 14.5 VDC). **Output Current:** 10 amperes intermittent, 10 minutes max. (5 amperes continuous). **Dimensions:** 5 11/16" H x 6¾" W x 11" D (incl. switch and feet).

High-Performance 2-Meter Antennas and Rotator



[1] **Cushcraft's 11 element yagi.** Features 13.2 dB forward gain, a 28 dB front-to-back ratio, and gamma match tuning for minimum SWR. Feeds directly with 52Ω coax. 146-148 MHz. Assembly required.

HDP-1470, Shpg. wt. 6 lbs. **29.95**

[2] **Standard gain fixed.** Omnidirectional. 3.75 dB gain, 1.1:1 SWR, 135-175 MHz, 100 watts. 52 ohm feed with PL-259. Mounts to 1¼" masts. Less coax. Preassembled.

HWA-202-11, 2 lbs. **17.95**

[3] **Standard gain mobile.** ⅝" wavelength rear deck whip. 3.4 dB gain, 1.1:1 SWR. 100 watts, 47" radiator. 17' coax, connectors.

HWA-202-3, 2 lbs. **19.95**

[4] **Super gain mobile.** Phased ¼ and ⅝ wave radiators. 5.2 dB gain. 200 watts; 6 MHz bandwidth; 1.1:1 SWR. Height 85". 17' RG-58U coax, connectors. **HWA-202-9,** 3 lbs. **39.95**

[5] **Super gain fixed.** 6 dB gain. 140-150 MHz. 6 MHz bandwidth. 1.2:1 SWR. 1000 watts. SO-239 connector. 117" long. 4 radials; 21" alum. rod. For 1¾" mast. Less coax.

HWA-202-10, 7 lbs. **69.95**

[6] **NEW! Alliance HD73 Heavy-Duty Rotator with Dual Speed Control.** For antennas with up to 10.7 sq. ft. of wind load area. Has positive no-slip drive, automatic brake action. For masts 1⅜" to 2½" O.D. For 117 VAC, 60 Hz. Require 6-cond. cable (use 8-cond. cable, page 7).

HDP-1295, Shpg. wt. 19 lbs. ... **119.95**

Put a full 2 kW power in your station with the SB-221 — now FCC Approved!

The Heathkit SB-201 has a 1 kW kick that's great for SSB



The SB-201 has been submitted to the FCC and we expect approval soon. Orders for this product will be held pending FCC approval. This product has not been approved by the Federal Communications Commission. This product is not, and may not be offered for sale or lease until FCC approval is obtained.

Heathkit Linears-Packed with Power and Features

new Heathkit SB-201 1 kW Linear Amplifier

$429.95

- **Complete 15 through 80 meter band coverage**
- **Fully shielded, fan-cooled amplifier compartment**
- **Circuit-breaker power supply protection**

Delivers a full 1200 watts PEP input on phone and 1 kW in on CW. The amplifier requires only 100 watts drive, so it's ideal for use with most any of the popular transmitters or transceivers. And to insure top performance, the SB-201 is loaded with the kinds of features you need!

The SB-201's heavy-duty final amplifier tubes are fan-cooled for maximum tube life and completely shielded to insure excellent TVI protection. A pretuned cathode-input circuit provides maximum drive efficiency and easier alignment. And to prevent distortion producing overdrive, the amplifier provides an ALC output for automatic exciter control.

The SB-201 has a built-in solid-state power supply which features full circuit breaker protection. A switchable multi-function panel meter shows SWR, grid current, plate current, relative power and plate voltage. For extra operating convenience, an antenna relay automatically switches the antenna to the exciter input when the SB-201 is off.

The sturdy yet lightweight construction of the SB-201 is achieved by using a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and component isolation. The amplifier's clean open chassis layout assures easy assembly and provides maximum efficiency for year-after-year dependability. A fine addition to any station.

Kit SB-201, Shpg. wt. 47 lbs. **429.95**

SB-201 SPECIFICATIONS: Band coverage: 80, 40, 20 & 15 meters. **Maximum power input:** 1200 watts P.E.P. SSB, 1000 watts CW. **Driving power required.** 100 watts. **Duty cycle:** SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). **Third order distortion:** –30 db or better at 1000 watts P.E.P. **Output impedance:** 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. **Input impedance:** 52 ohm unbalanced; broad-band pretuned input circuit requires no tuning. **Meter functions:** 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. **Front panel controls:** Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. **Tube complement:** Two 572B/T-160-L (in parallel). **Power requirement:** 120 volts AC @ 16 amperes (max.), 240 volts AC @ 8 amperes (max.). **Cabinet size:** 14⅞" W x 6⅝" H x 13⅜" D. **Net weight:** 35 lbs.

new Heathkit SB-221 2 kW Linear Amplifier

$579.95

- **High-efficiency pre-tuned broadband pi-input**
- **Zener-diode regulated power supply**
- **Front-panel current and voltage meters**

The Heath SB-221 is the one that's destined to make Amateur Radio history because it offers more features and performance than all the rest. It features a pair of conservatively rated Eimac 3-500Z's which deliver up to a full 2000 watts PEP input on phone and can be loaded to 1 kW in on both CW and RTTY. A broadband pre-tuned pi-input delivers maximum efficiency with extremely low distortion over the entire 15-80 meter bands. Just 100 watts of exciter drive is all that is required to drive the amplifier to full output.

With an SB-221, tune-up couldn't be easier! Just select the band you wish to operate, set the CW-tune/SSB rocker switch to the CW-tune position, adjust both tune and load controls for maximum relative power out—and you're ready to go. Ready with the kind of signal that always catches the new DX, gets your traffic through, and provides reliable year-after-year communications performance.

The SB-221's power supply can be easily wired for either 120 or 240 VAC operation. Zener diode regulated operating bias reduces idling current for cooler running and extended tube life. The amplifier incorporates built-in circuit breaker protection and a large, quiet-running fan provides maximum tube cooling. Other features include ALC to prevent distortion producing overdrive; front-panel switch-selected monitoring of grid current, relative power, and high voltage. There's also a separate meter for measuring final amplifier plate current. Kit assembly is easy and enjoyable too.

Kit SB-221, Shpg. wt. 66 lbs. **579.95**

SB-221 SPECIFICATIONS: Band coverage: 80, 40, 20 & 15 meters. **Driving power:** 100 W. **Max. power input:** SSB, 2000 W. PEP; CW, 1000 W.; RTTY, 1000 W. **Duty cycle:** SSB, Continuous voice modulation. CW, Continuous (maximum key-down 10 minutes). RTTY, 50% (maximum transmit time 10 minutes). **Third order distortion:** –30 dB or better. **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity Meter Switch, Power, CW/Tune — SSB, Plate meter, Multi-meter (Grid mA, Relative Power and High Voltage) **Rear panel:** Line cord, circuit breakers (two 10 A). Antenna Relay (phono). ALC (phono). RF Input (SO-239). Ground post. RF Output (SO-239). **Tubes:** Two Eimac 3-500Z. **Power requirement:** 120 VAC, 50/60 Hz at 20 amp. max. 240 VAC, 50/60 Hz at 10 amp. max. **Cabinet size:** 8¼" H x 14⅞" W x 14½" D.

Use the SB-104A and its Station Accessories for a truly state-of-the-art Amateur Radio Station





The Heathkit SB-104A-Sophisticated Technology at a

$699.95

- **Broadband technology eliminates the need for pre-tuning**
- **Readout accuracy within ±200 Hz**
- **100 watts out on all bands**

From the moment you power up you'll begin to experience the excitement and convenience of SB-104A operation. Apply power and almost instantly six red digits are ready to display your operating frequency to within ±200 Hz accuracy. Pushbutton select CW upper, or lower sideband transmission, plug in your key, or opt for PTT or VOX operation and you're ready to experience broadband solid-state excitement.

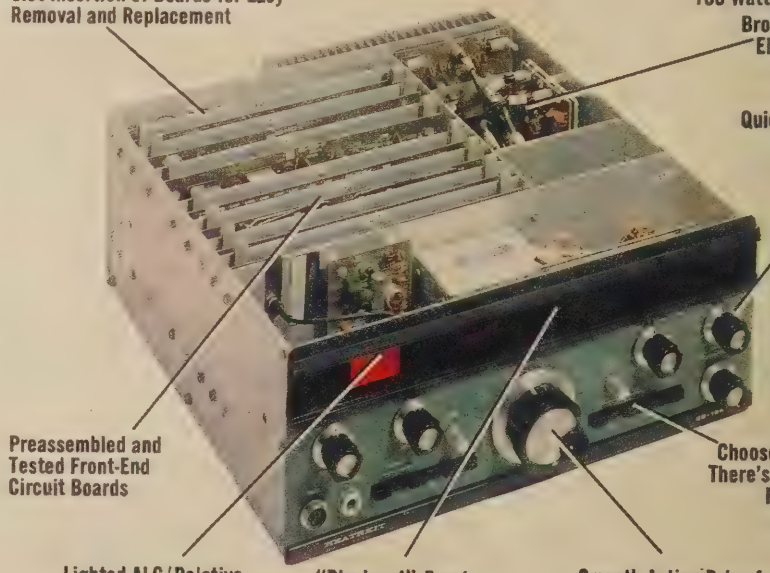
Spin the main tuning knob and appreciate its feel as you smoothly move the 104A's temperature-compensated FET Hartley VFO up or down the band. And as you QSY, you'll quickly discover that the SB-104A's completely re-engineered front end receiver board really means business! Its circuitry is factory preassembled and tested, incorporates individual preselector filters for each band, features balanced first and second mixers, and plays a large part in the 104A's less than 0.5 microvolt sensitivity figure. The SB-104A's receiver features razor sharp filtering, excellent IF selectivity, individual crystal-controlled BFOs for USB, LSB and CW, and balanced mixer product detection. Received audio quality is outstanding, precisely tailored for SSB and CW reproduction. And to make your QSOs more enjoyable, by reducing the nuisance of QSB, you can switch select either fast or slow AGC action.

When it comes to innovation, the SB-104A's transmitter section is second to none. You have a choice of 100 watts out for "barefoot" operation or, with the touch of a button, select one watt out and turn your 104A into Ham radio's most sophisticated QRP rig. Transmitter circuitry features quad op-amp audio processing on both phone-patch and microphone inputs, filter sideband generation, crystal-controlled heterodyne oscillators for maximum frequency stability, and a unique ALC system to eliminate distortion-producing overdrive. Most importantly, the SB-104A utilizes driver and PAs in a broadband no tune push-pull configuration, diode biasing to prevent PA thermal runaway, and power regulating control circuitry to prevent damage under high SWR operating conditions. You spend your time operating instead of tuning!

For extra operating performance, add 400 Hz CW selectivity with the optional SBA-104-3 crystal filter or cut ignition noise by installing the SBA-104-1 noise blanker.

Add the matching SB-614 Station Monitor, SB-634 Five-Function Console, SB-604 Speaker and SB-644A Remote VFO and your SB-104A becomes the center of your ultimate station — ready to give you years of great QSOs, exciting DX and all around performance! Operates from a charging 12 VDC auto electrical system or the HP-1144 Power Supply.

Kit SB-104A, Shpg. wt. 32 lbs. **699.95**





Sensational Price!

Noise Blanker for SB-104A.
Kit SBA-104-1, Shpg. wt. 1 lb. **26.95**

400 Hz CW Crystal Filter for SB-104A.
Kit SBA-104-3, Shpg. wt. 1 lb. **39.95**

Mobile Mounting Bracket for SB-104A.
Kit SBA-104-2, Shpg. wt. 6 lbs. **29.95**

Look At These Super SB-104A Specifications!

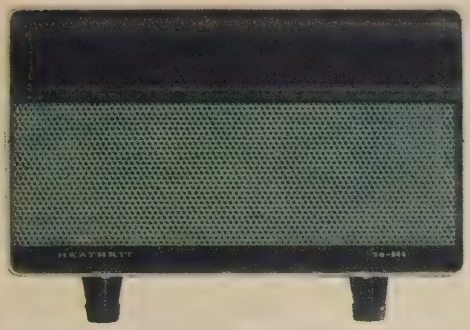
Frequency Coverage: 3.5 MHz through 29.7 MHz amateur bands, 15 MHz WWV receive only. **Frequency Stability:** Less than 100 Hz/30 min drift after 30-min. warmup; less than 100 Hz drift for ±10% change in primary voltage. **Readout Accuracy:** Within ±200 Hz ±1 count. **TRANSMITTER — RF Power Output: High Power** (50-ohm non-reactive load). **SSB:** 100 watts PEP ±1 dB; **CW:** 100 watts ±1 dB. **Low Power SSB:** 1 watt PEP (minimum); **CW:** 1 watt (min.). **Output Impedance:** 50 ohms, less than 2:1 SWR. **Carrier Suppression and Unwanted Sideband Suppression:** −50 dB down from 100 watt single-tone output at 1000 Hz reference. **RECEIVER — Sensitivity:** 0.5 for 10 dB S+N/N for SSB. **Selectivity:** 2.1 kHz minimum at −6 dB, 5 kHz max. at −60 dB. (2:1 nominal shape factor). **CW Selectivity:** (with accessory CW filter) Selectable 2.1 kHz/400 Hz. **IM Distortion:** −65 dB min.; −57 dB typ. with noise blanker. **Image Rejection:** −60 dB min. **Dimensions:** 5¾" H x 14⅜" W x 13⅞" D.

Now the SB-104A Takes You Less Time To Assemble

The SB-104A now comes with both the front-end and transmitter IF boards factory preassembled and tested. This insures excellent sensitivity, saves you construction time, and gives you an even cleaner output signal!

For Fastest Service
Use The Heathkit "Hot Line"
(616) 982-3411
Anytime day or night

Matching Speaker and Power Supply



Designed to match the SB-104A Transceiver. Cabinet is large enough to house the HP-1144A Power Supply, too. 5" x 7" oval speaker is response-tailored for SSB. Frequency response: 300-3000 Hz. Connector plug and cable are included. Dimensions: 7⅛" H x 10⅛" W x 14" D.

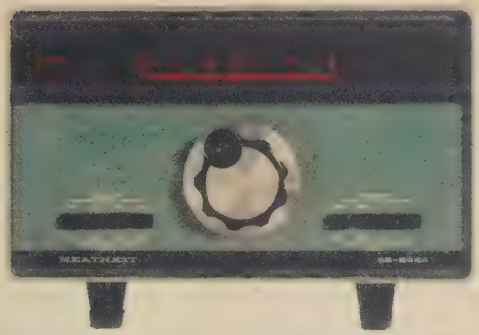
Kit SB-604, Shpg. wt. 8 lbs. **39.95**

HP-1144A Fixed Station Power Supply

120 or 240 VAC operated supply provides 13.8 VDC required by SB-104A Transceiver. Full-wave bridge circuit has triple Darlington regulation with an IC which samples at the transceiver, compares and automatically maintains a fixed voltage — almost no change in voltage from no load to full load. Has complete overvoltage protection too! Mounts inside SB-604 speaker cabinet.

Kit HP-1144A, Shpg. wt. 27 lbs. **89.95**

SB-644A Remote VFO adds real versatility

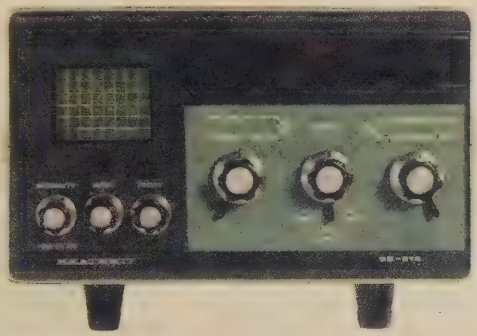


Designed for use with the SB-104A. Provides split transmit/receive capability so necessary for "DX" and net operations. Multi-mode capability allows transceive operation with either the "644A" or the SB-104A. Use either of two crystal positions for fixed-frequency control. Use "644A" tuning scale for reference, exact frequency readout takes place in the SB-104A. Construction is a simple matter with just three printed circuit boards to assemble.

Kit SB-644A, Shpg. wt. 10 lbs. **119.95**

SB-644A SPECIFICATIONS: Frequency Coverage: 5.0-5.5 MHz allowing 80, 40, 20, 15, 10 meter operation in the SB-104A. **Frequency Stability:** Less than 100 Hz drift per 30 min. after thirty minute warmup. **Modes of Operation:** Remote VFO Main VFO; Receive Remote/Transmit Main; Receive Main/Transmit Remote; Crystal frequencies (2) (crystals not supplied). **Power Requirement:** 11V and 13.6V at 500 mA supplied by SB-104A. **Dimensions:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 6½ lbs.

SB-614 Station Monitor checks your signal



Monitors transmitted SSB, CW, & AM signals up to 1 kW from 80-6 meters. Shows nonlinearity, insufficient or excessive drive, poor carrier or sideband suppression, regeneration, parasitics and key clicks. Manual includes 40 CRT displays including: 21-transmit envelope patterns, 7-trapezoid patterns, 6-RTTY cross patterns (for proper shift, mark and space adjustment), and 6-CW patterns. Solid-state.

Kit SB-614, Shpg. wt. 17 lbs. **169.95**

SB-614 SPECIFICATIONS: RF SAMPLING SECTION: Power Limits: Exciter input (50-75 ohm) 10 to 300 watts; Antenna input (50-75 ohm) 10 to 1000 watts. **Insertion Loss:** Negligible. **VERTICAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 75 pf. **Sensitivity:** 60 mV rms/¼" vertical deflection. **Attenuator:** 2-position; x1, 2 volts rms max. input; x10, 20 volts rms max. input. **HORIZONTAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 50 pf. **Sensitivity:** 50 mV rms/¼" horizontal deflection. **Power Requirement:** 110-130 or 220-260 VAC, 60/50 Hz. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 12 lbs.

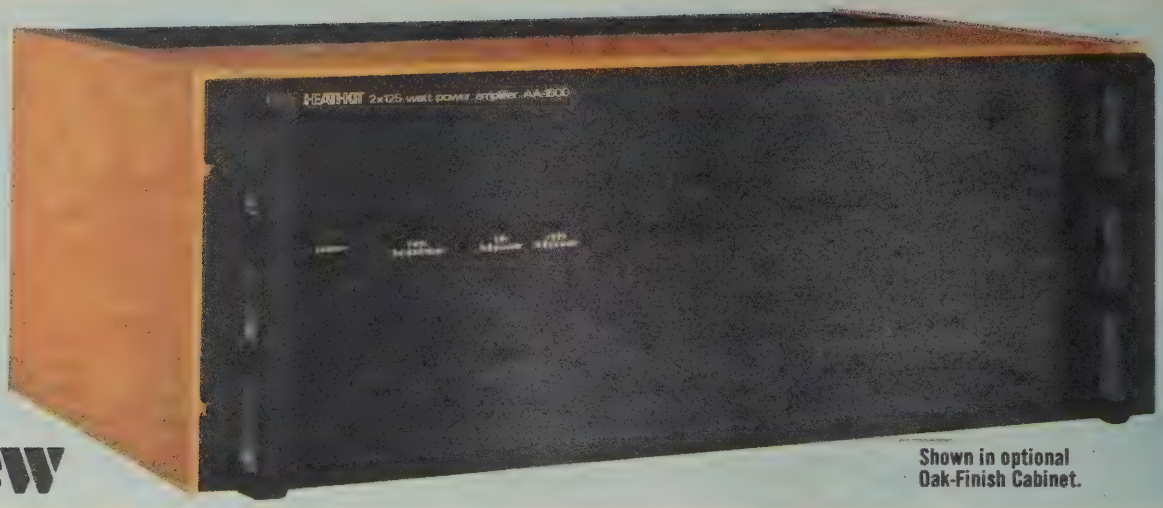
SB-634 Five-function Station Console



Features 24-hour digital clock; ten-minute ID timer; RF wattmeter with 200 or 2000 watt full scale ranges; SWR bridge with sensitivity control; phone patch that can be used manually or with VOX control. Wattmeter impedance is a nominal 50 ohms. The phone patch provides at least 30 dB isolation. Input impedance is 600 Ω. Matches 3-16 Ω receiver outputs, and 600 Ω or hi-Z transmitter input.

Kit SB-634, Shpg. wt. 13 lbs. **189.95**

SB-634 SPECIFICATIONS: CLOCK — Display: Six digits. **Time Base:** 24 hours. **TIMER — Display:** Three full digits. **Time Interval:** 10 minutes with automatic reset. Manual reset at any portion of 10-minute period. **Signal:** Visual only or both visual and aural. **RF POWER/SWR METER — Frequency Range:** 1.8 to 30 MHz. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Handling Capability:** 2000 watts (maximum). **SWR Sensitivity:** Less than 10 watts. **Impedance:** 50 ohm nominal. **Connectors:** UHF type SO-239. **Power Requirement:** 120/240 VAC, 60/50 Hz. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 10 lbs.



NEW

Shown in optional Oak-Finish Cabinet.

Heathkit AA-1600 High-Performance Rack-Mount Stereo Amplifier

125 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.05% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz

The AA-1600 is the first amplifier in our new series of professional-style rack-mount stereo components. Other products in the series include the AD-1701 Graphic Indicator (below), the AJ-1600 AM/FM Digital Tuner (next page) and the AP-1800 Deluxe Stereo Preamplifier (coming soon). In performance, specifications and sound reproduction, these products are designed to rank with the finest stereo components available anywhere!

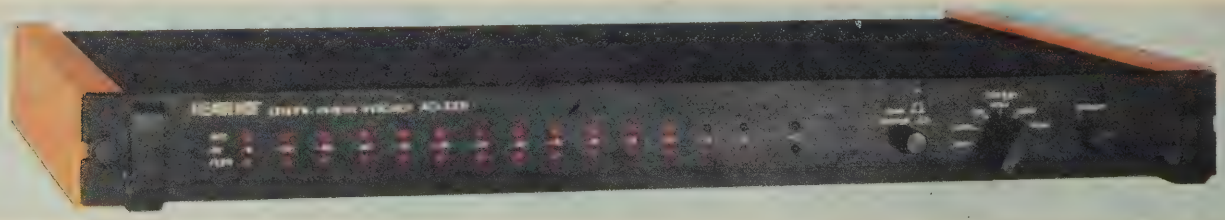
The AA-1600 reproduces the entire musical spectrum with a clarity and definition that make it an excellent choice for use with the most demanding speaker systems. Hum and noise are a full 100 dB down, so music springs forth from a background of total silence. Transient Intermodulation Distortion, a recently discovered form of amplifier distortion which tends to "muddy" the sound, is so low (less than 0.05%) we're one of the few manufacturers to specify it! This low T.I.M. contributes to clean, well-defined sound especially at the high end of the frequency spectrum. Fused B+ and B− power supply lines for each channel, along with especially rugged output devices, eliminate the need for dissipation limiters which can cause tweeter-damaging clicks and pops from false triggering. Of course, there's complete speaker and circuit protection, including speaker turn-on delay and a thermal circuit breaker.

To assure performance to our superior specifications, the amplifier and power supply circuit boards are supplied fully assembled, tested and adjusted. Minimal point-to-point wiring and a clean, open chassis layout contribute to easy building. The AA-1600 is designed for mounting in a standard EIA equipment rack, or for installation in the AEA-1800-1 accessory cabinet. The AA-1600 is one of the finest amplifiers Heath has ever designed, and an easy and enjoyable kitbuilding experience too. Make it a part of your music system now.

Kit AA-1600, Shpg. wt. 51 lbs. **359.95**

Oak-Finish Cabinet for AA-1600.
AEA-1800-1, Shpg. wt. 5 lbs. **34.95**

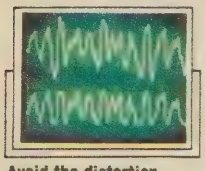
AA-1600 SPECIFICATIONS: Frequency Response: ±1 dB, 7 Hz to 50 kHz. −3 dB, 5 Hz to 100 kHz (at 1 watt). **Intermodulation Distortion (SMPTE):** Less than 0.05% from 250 mW to 125 watts. **Transient Intermodulation Distortion (T.I.M.),** after. Leinonen, Otala and Curl: 0.05%. **Damping Factor:** Greater than 50. **Hum and Noise:** 100 dB below 125 watts. **Channel Separation:** 70 dB minimum. **Input Impedance:** 20K ohms. **Input Sensitivity:** 1.5 Volts. **Net Weight:** 38¼ lbs. **Dimensions:** 19″ W x 7⅛″ H x 13″ D. **Power Requirement:** 120 VAC, 60 Hz.



HEATH charg-a-kit REVOLVING CHARGE

NEW Heathkit AD-1701 Graphic Output Indicator accurately monitors your stereo system's performance

The AD-1701 provides a far more accurate and precise indication of your stereo system's output than conventional meters or displays. Its extremely fast response time and special peak-hold circuit provide display of even the shortest musical transients. It alerts you to the possibility of distortion producing overloads on these peaks. It is essential for balancing your stereo system for equal output from each channel and it even indicates the dynamic range of the program material. It is also a useful aid in making professional quality tape recordings.



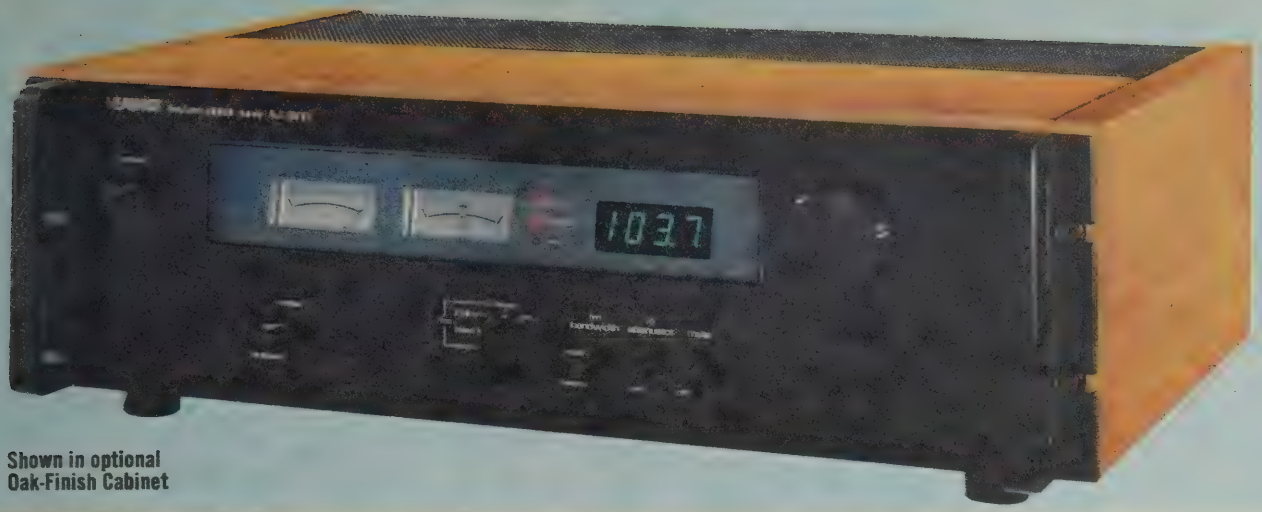
Avoid the distortion, reduced dynamic range and speaker damage caused by clipping (lower trace)!

Two rows of 15 LED's provide a graphic indication of system output. The input level is displayed in dB and a range switch lets you reference 0 dB to preselected voltage or power levels. Separate rear panel inputs for high level (power amp) or low level (preamp) inputs are provided. A peak/average switch lets you display the peak (maximum) level of the program material (to monitor overload or dynamic range) or average level to display the average output level of your preamp or amplifier.

The AD-1701 has a handsome black anodized front panel and front handles for rack mounting. It is styled to match the AA-1600 amplifiers and other Heathkit rack-mount equipment. Includes oak finish side panels.

Kit AD-1701, Shpg. wt. 15 lbs. **189.95**

AD-1701 SPECIFICATIONS: PEAK MODE. Frequency Response @ 0 dB, 20 Hz to 20 kHz ±0.5 dB. **LED's per channel: 15. Display Range:** +3 dB to −50 dB. **Display Accuracy at 1 kHz:** ±0.5 dB from +3 dB to −30 dB; ±1 dB from 35 dB to 50 dB. **Channel Tracking:** 0.5 dB from +3 to −30 dB; 1.0 dB from −35 to −50 dB. **Peak Detector Rise Time:** 13 μsec (50 dB rise). **Hold Time:** 50 msec. **Decay Time:** 3 msec. **Display Modes:** Peak/Average. **Input Impedance:** 100 K ohms. **Range/Sensitivity:** Low-level, 0.1 volt; 0.32 volt; 1.0 volt. High level (8 ohms). 60 watts, 125 watts, 250 watts. **Dimensions:** 19″ W x 1¾″ H x 13″ D. 19¼″ W x 2″ H w/side panels. **Power Requirement:** 120 VAC, 60 Hz.



Shown in optional
Oak-Finish Cabinet

NEW! for winter • Heathkit AJ-1600 High-Performance Rack-Mount Stereo FM/AM Tuner

$379.95

- 1.8 μV Sensitivity
- Over 45 dB Separation

The new Heathkit AJ-1600 Stereo FM/AM Tuner is designed for use with the AA-1600 Stereo Amplifier (page 28) and AP-1800 Preamplifier as the "heart" of a truly sophisticated stereo music system. Its specifications and performance characteristics make it the finest tuner Heath has ever designed, and its operating features and convenient digital readout make it a tuner you'll want to build and enjoy for years to come!

Significant specifications include: sensitivity of 1.8 μV (mono) and 3.5 μV (stereo) for clean, crisp reception of even weak or distant stations; signal-to-noise ratio of 80 dB (stereo) and 75 dB (mono) for noise-free listening on stronger stations; harmonic distortion levels below 0.1% on both mono and stereo; and stereo channel separation of more than 45 dB at mid-frequencies for full, rich stereo listening. Even the AM section has been designed to provide outstanding reception that approaches "hi-fi" quality.

The bright-green digital readout displays AM and FM frequencies far more accurately than conventional tuning dials. Signal-strength and center-tune meters let you "zero-in" on the best signal fast and easy. The two RF and mixer stages use latest-design dual-gate MOS FET's to virtually eliminate strong station interference and insure high reliability and performance. A selectable IF bandwidth switch on the front panel provides optimum reception in crowded station areas; and a switchable resistive-type RF attenuator reduces the signal on strong local stations without introducing distortion. In short, the AJ-1600 brings you outstanding AM and FM reception on all usable signals.

Both the 5-gang FM front end and FM IF/Stereo Demodulator boards are factory assembled and tested to shorten kitbuilding time and assure optimum performance. The open chassis layout and wiring harnesses also speed assembly.

Kit AJ-1600, Shpg. wt. 25 lbs. **379.95**

AEA-1800-2, Oak-Finish Cabinet for AJ-1600. Shpg. wt. 5 lbs. **34.95**

AJ-1600 SPECIFICATIONS: FM Section. Frequency Response: ±0.5 dB, 20 Hz to 15 kHz. **Antenna:** 300 ohm balanced, 75 ohm unbalanced. **Selectivity:** Wide IF Bandwidth, −40 dB. Narrow IF Bandwidth: −80 dB. **Image Rejection:** 100 dB. **IF Rejection:** 100 dB. **Spurious Rejection:** 100 dB. **Capture Ratio:** 1.2 dB. **AM Suppression:** 60 dB. **Stereo Channel Separation:** 45 dB at 1000 Hz. **Stereo Harmonic Distortion:** 0.1% at 1 kHz. **19 kHz and 38 kHz Suppression:** 65 dB. **AM Section: Sensitivity:** External Antenna, 30 μV. Radiated, 250 μV/meter. **Selectivity:** Adjacent channel, −20 dB. Alternate channel, −60 dB. **Image Rejection:** 70 dB at 600 kHz. 65 dB at 1400 kHz. **Signal-to-Noise Ratio:** External antenna, 50 dB. Radiated, 45 dB. **GENERAL: Power Requirement:** 120 or 240 VAC, 50/60 Hz, 20 watts. **Dimensions:** 19″ W x 5¾″ H x 14″ D. **Net Weight:** 20.7 lbs.

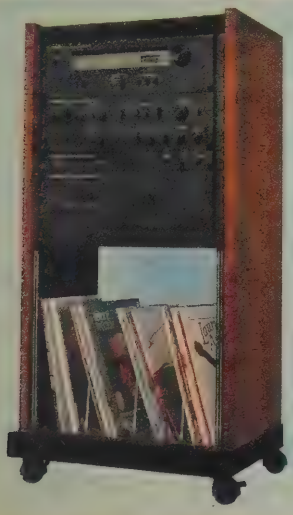


Dolby® FM Module for AJ-1600

The AJA-1600-2 Dolby FM module brings you the reduced noise and improved dynamic range of FM broadcast stations now using the Dolby Noise Reduction System. Builds and installs right into the AJ-1600 in one evening.

Kit AJA-1600-2, Shpg. wt. 1 lb. **49.95**

Dolby is a trademark of Dolby Laboratories, Inc.



COMING SOON! The new Heathkit AE-1705 Equipment Rack to house your "1600" and "1800" Series Stereo Components

Here's a stylish and sophisticated "home" for your new Heathkit rack-mount stereo components. This deluxe standard EIA rack has plenty of room for all your components — amplifier, tuner, graphic output indicator and stereo preamplifier, plus a turntable on top and record or tape storage on the bottom. The cabinet is constructed of selected hardwoods, with metal shelves and record dividers. Easy-rolling swivel casters let you move the rack around easily. Watch for it in the next catalog.



COMING SOON! The deluxe AP-1800 Rack-Mount Stereo Preamplifier for use with AA-1600 and AJ-1600 Components

The new Heathkit AP-1800 is an extremely versatile preamplifier designed for use with the Heathkit rack-mounted series of audio components. It provides the complete and versatile control of audio signals without the introduction of audible distortion or coloration. Some of the important features of the AP-1800 are: selectable cartridge capacitance and sensitivity; a built-in moving-coil cartridge preamplifier; delay turn-on circuit; phono overload indicator; stepped tone controls with dual turnover; tape-copy function selector; selectable output and muting capabilities; and dual turnover high and low-pass filters with 12 dB/octave attenuation. Watch for it in the next catalog!

Our Famous Heathkit "Modulus"

The music system designed to change with your changing needs



$599.95

Combines a deluxe stereo FM-AM tuner with a superb 2/4-channel preamplifier for unlimited versatility

The AN-2016 Digital Tuner/Preamplifier puts you in command of your musical environment. With its matching amplifier and optional plug-in modules you can "custom design" a music system to satisfy your every listening need!

The tuner section of the AN-2016 is one of the most technically advanced on the market. Four ½" tall LED's display the broadcast frequency far more accurately than a conventional tuning dial. TWO tuning meters; signal-strength for AM and FM, and center channel for FM give you outstanding tuning precision. A phase-locked loop stereo multiplex circuit assures wide FM stereo separation of 40 dB at 1000 Hz. Even the AM section features dual-gate MOSFET's, a nine-pole LC filter and static-shielded loop antenna for AM reception that's real hi-fi quality.

The preamplifier section of the AN-2016 has overload characteristics and freedom from distortion that allow superb sound reproduction from any program source. On high-level inputs, the AN-2016 reaches full output with a signal of 170 mV, yet it doesn't overload until 5 volts. The phono amplifier can be driven to full output with as little as 2 mV, but does not overload until the input reaches 60 mV.

Has peak-responding output meters for each channel, full bass, treble and balance controls, lighted function pushbuttons, more. Make the Modulus the "heart" of your custom music system.

Kit AN-2016, Shpg. wt. 39 lbs. **599.95**

CD-4 Demodulator Module. Lets you play CD-4 discrete 4-channel records through the AN-2016.

Kit AD-1507, Shpg. wt. 2 lbs. **79.95**

Dolby FM Module. Provides reduced noise and increased dynamic range of Dolby FM. Assembles, installs in one evening.

Kit AD-1504, Shpg. wt. 1 lb. **39.95**

SQ Decoder Module. For 4-channel SQ material. Includes full-logic with variable blend enhancement for outstanding separation from tapes, records and FM.

Kit AM-1503, Shpg. wt. 2 lbs. **49.95**

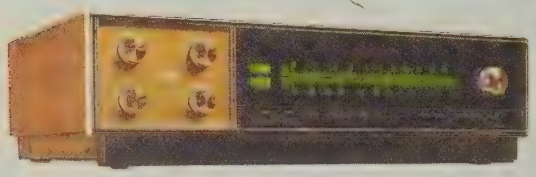
Matching power amplifier

60 WATTS MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

A perfect match for the AN-2016 in styling and performance — and you should also consider using it with other quality preamps. Just compare the specs — intermodulation distortion is less than 0.1% at full power and drops to a mere 0.05% at 0.1 watt. Frequency response is exceptionally wide and flat — down just 0.5 dB at 8 Hz and 45,000 Hz. Features pushbutton main and remote speaker switching, lighted power button. Unique plug-in speaker connectors help eliminate phasing problems.

Kit AA-1506, Shpg. wt. 25 lbs. **199.95**

AN-2016 SPECIFICATIONS: PREAMPLIFIER — Frequency Response: –0.5 dB at 10 Hz and 30 kHz. **Total Harmonic Distortion:** less than 0.05% at 1.5 V into 20K ohms. **IM Distortion:** less than 0.05%. **Hum & Noise (unweighted):** phono, –75 dB ref. to 10 mV; high-level, –80 dB ref. to 0.25 V. **Input Sensitivity (for 1.5 V output):** phono, 2/6 mV (switch selected). **TUNER — (Monophonic — Sensitivity:** 1.7 μV (IHF); 3.5 μV for 50 dB S/N. **Signal-to-Noise Ratio:** 68 dB at 1000 μV. **Selectivity:** greater than 100 dB. **Capture Ratio:** 1.3-dB. **Spurious Rejection:** greater than 90 dB. **IF Rejection:** greater than 100 dB. **Image Rejection:** greater than 90 dB. **Total Harmonic Distortion:** 0.3%. **IM Distortion:** less than 0.1%. **AM Suppression:** 68 dB. **Antenna Inputs:** 300Ω balanced; 75Ω unbalanced. **FM (Stereophonic) — Stereo Sensitivity:** 35 μV for 50 dB S/N. **Total Harmonic Distortion:** 1 kHz, 0.35%. **Stereo Separation:** 40 dB at 1 kHz; 20 dB at 15 kHz. **AM TUNER — Sensitivity:** 6 μV for 20 dB S+N/N. **Selectivity:** more than 60 dB at 20 kHz. **Signal-to-Noise Ratio:** more than 48 dB. **Harmonic Distortion:** less than 1.0% at 400 Hz. **Antenna:** external static-shielded loop. **GENERAL — Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** approx. 6½" H x 19" W x 14½" D. SQ is a trademark of CBS, Inc.; "Dolby" is a trademark of Dolby Labs and "CD-4" is a trademark of the Japan Victor Company.



The top-performing deluxe AR-1500A Stereo FM-AM Receiver — A Super Hi-Fi Value

$399.95

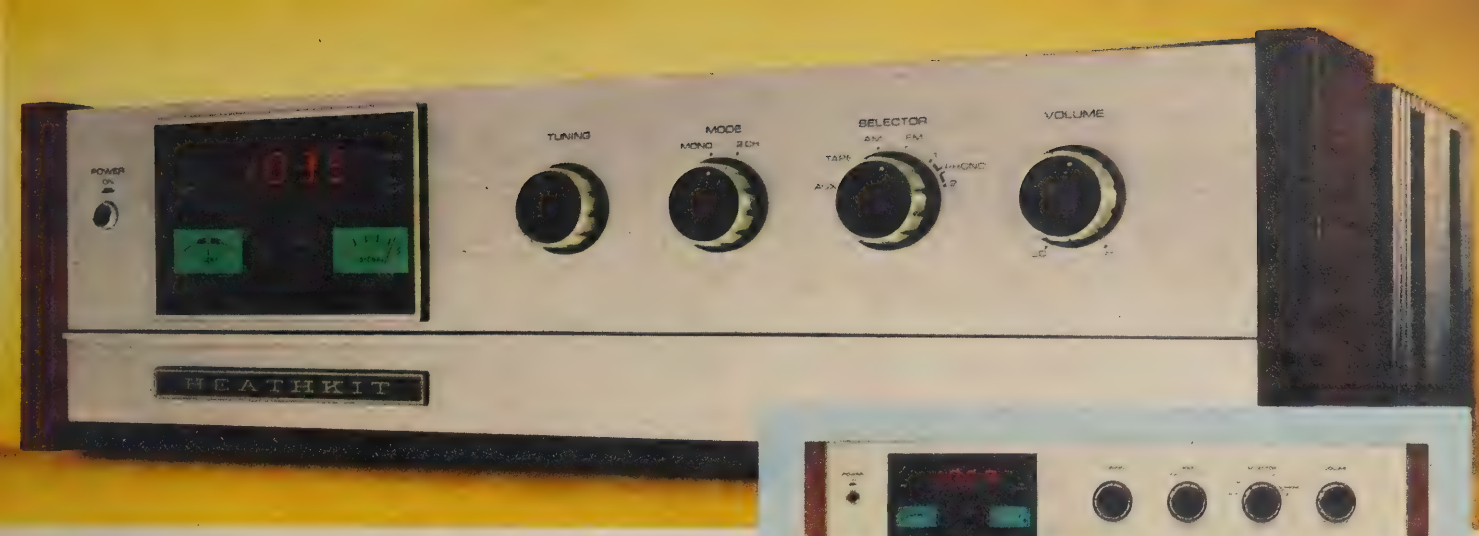
60 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz

The AR-1500A delivers the kind of clean, low-distortion power and excellent AM and FM performance the others only talk about: it's easily one of the best performers in its price range! A factory-assembled FET front end provides high sensitivity and excellent overload characteristics. Fixed LC filters help keep stations separate. A phase-locked loop multiplex demodulator provides over 40 dB of mid-band stereo separation. Signal-strength and center-channel tuning meters make tuning easy and accurate. Has pushbutton function selectors, TWO stereo headphone jacks, full controls and more. You can custom mount the receiver or order the handsome optional walnut veneer case.

Kit AR-1500A, Shpg. wt. 51 lbs. **399.95**

ARA-1500-1, Walnut Veneer Case. Shpg. wt. 8 lbs. **27.95**

AR-1500A SPECIFICATIONS: AMPLIFIER — Frequency Response (1 watt level): –1 dB, 9 Hz to 80 kHz; –3 dB, from less than 5 Hz to 120 kHz. **Intermodulation Distortion:** Less than 0.1% at full power; less than 0.1% at 1 watt. **Input Sensitivity:** Phono, 1.8 millivolts; Tape, Aux:, Monitors: 140 millivolts. **Hum & Noise:** Phono (10 millivolt reference), –63 dB. Tape and Aux (0.25 volt reference), 75 dB. **FM (Stereophonic) — Channel Separation:** 40 dB or greater at midfrequencies. **Harmonic Distortion:** 0.5% at 1000 Hz with 100% modulation. **AM — Sensitivity:** 50 μV with external input. **Image Rejection:** 70 dB at 600 kHz; 50 dB at 1400 kHz. **IF Rejection:** 70 dB at 1000 kHz. **Power Requirement:** 120 or 240 volts, 60/50 Hz AC. **Dimensions:** Overall — 18½" W x 5⅛" H x 13⅞" D.



Our Finest Receiver EVER!

$579.95

70 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.08% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

From its half-inch tall LED frequency readouts to its extraordinarily low distortion, the Heathkit AR-1515 is the finest receiver Heath has ever designed.

The AR-1515's digital readout is far more accurate than dial-type tuning. Simply tune to the exact frequency you want. Signal-strength and center-channel meters then help you "zero in" on the strongest signal and lowest FM distortion. There's even an oscilloscope output to monitor multipath distortion.

But digital readout is only the beginning. With 1.8 μV sensitivity, the FM section is one of the world's finest. The optional AD-1504 Dolby Module allows you to enjoy the reduced noise and increased dynamic range of Dolbyized FM broadcasts. The AM section is probably the finest in any receiver — dual-gate MOSFET's in the front end and a computer-designed 9-pole filter for outstanding selectivity.

The amplifier section meets the same high standards. Harmonic distortion is an infinitesimal 0.08%! Frequency response is +0, −1 dB from 8 Hz to 45,000 Hz and +0, −3 dB from 4 Hz to 80,000 Hz! That extra margin of performance assures clean, wide-range sound without audible strain or struggle on even the most complex musical passages. And you'll hear the music over a background of silence — hum and noise are 65 dB below full output in phono and 80 dB below full output on high-level sources.

The amplifier section is also unmatched in convenience. All the frequently-used controls — volume, input selector, stereo/mono switch, tuning — are on the front panel. The secondary controls are concealed behind a hinged door. Convenient indicator lights on the front panel show the input you've selected. The digits light only when listening to AM or FM and only the necessary tuning meters are illuminated — signal-strength only for AM, signal-strength and center-tune for FM.

The bass and treble controls act primarily at the frequency extremes to compensate for room acoustics and program deficiencies while maintaining smooth midrange response. And the AR-1515's preamp out/amp in jacks allow it to be used with any audio equalizer, such as the Heathkit AD-1305.



The AR-1515 is even easy to build! Obviously the AR-1515 is a complex and sophisticated receiver, but its well thought out, modular design and color-coded wiring harnesses simplify assembly. There's even a separate test meter to double-check your work each step of the way. Finally, the illustrated, step-by-step assembly manual makes it easy for even a novice to assemble the AR-1515.

Kit AR-1515, Shpg. wt. 47 lbs. **579.95**

Dolby FM Module.
Kit AD-1504, Shpg. wt. 1 lb. **39.95**

AR-1515 SPECIFICATIONS: AMPLIFIER — Frequency Response: +0, −1 dB, 8 Hz to 45 kHz; +0, −3 dB, 4 Hz to 80 kHz. **Intermodulation Distortion:** less than 0.08% from 0.25 to 70 watts (full output). **Damping Factor:** Greater than 60. **Input Sensitivity:** Phono 1 & 2, 2 mV. Aux., Tape & Dub., 200 mV. **Input Overload:** Phono, greater than 100 mV, Aux., Tape & Dub., greater than 10 V. **Hum and Noise:** Phono (2 mV reference), −65 dB. Aux., Tape & Dub., (200 mV reference) −80 dB. **FM (Monophonic): Frequency Response:** ±1 dB, 20-15,000 Hz. **Antenna:** 75 or 300 ohm. **Sensitivity:** 1.8 μV*. **Selectivity:** 100 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 65 dB*. **Harmonic Distortion:** 0.3%. **Intermodulation Distortion:** 0.1%. **Signal to Noise Ratio:** 70 dB*. **Spurious Rejection:** 90 dB*. **Mute Threshold:** 0-5 μV variable. **FM (Stereophonic): Channel Separation:** 40 dB or greater at mid-frequencies; 35 dB at 100 Hz; 20 dB at 10 kHz. 20 dB (nominal) at 15 kHz. **Harmonic Distortion:** 0.35% with 100% modulation. **19 and 38 kHz Suppression:** 60 dB. **SCA Suppression:** 60 dB. **AM: Sensitivity:** 5 μV with 50-ohm direct input. **Selectivity:** 20 dB at 10 kHz. **AM Antenna:** external static-shielded loop. **Image Rejection:** 70 dB at 600 kHz. 50 dB at 1400 kHz. **GENERAL: Accessory AC Outlets:** One switched and one unswitched. **Power Requirement:** 120/240 VAC, 50/60 Hz. **Dimensions:** 21½" W x 6¾" H x 15" D. **Net Weight:** 35.8 lbs.

*Rated IHF (Institute of High Fidelity Standards).

Dolby is a trademark of Dolby Laboratories.



AA-1515 Stereo Power Amplifier

$299.95

70 WATTS MINIMUM RMS, PER CHANNEL, INTO 8 OHMS WITH LESS THAN 0.08% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

The AA-1515 is the amplifier section of the AR-1515 receiver. It gives you the low-distortion power you need to drive most any speakers to "live performance" volume levels. Harmonic distortion is an amazing 0.08% over the 20-20,000 Hz range for exceptionally accurate music reproduction. Background noise is a full 65 dB down on phono input, 80 dB down on all other inputs. Has dual output meters calibrated in both watts and decibels over a 40 dB range for an accurate visual indication of amplifier output. The meters respond to peaks as short as a record click, making them useful as overload indicators. High and low filters help you get the best sound from old or worn records. Handsome cabinet with brushed aluminum front panel, solid walnut side panels. Easy kit assembly.

Kit AA-1515, Shpg wt. 40 lbs. **299.95**

AA-1515 SPECIFICATIONS: Frequency Response: −1 dB, 8 Hz to 45 kHz; −3 dB, 4 Hz to 80 kHz. **IM Distortion:** less than 0.08% from 0.25 to 70 watts. **Damping Factor:** greater than 60. **Input Sensitivity:** Phono, 2 mV. Aux., Tuner, Tape Mon., Tape Dub., 150 mV. **Input Overload:** Phono, greater than 100 mV. All other inputs: greater than 10 volts. **Hum and Noise (Unweighted):** Phono, 65 dB. Tape, Tuner and Aux., 80 dB. **Power Requirement:** 120 or 240 volts; 60/50 Hz. **Dimensions:** 17½" W x 6⅛" H x 14¼" D. **Net Weight:** 27 lbs.

Quality Heathkit Stereo Components



▲ This low-priced Receiver is an ideal "starter" stereo!

▲ This medium-power Receiver is "right" for most listening areas!

AR-1429 AM/FM Stereo Receiver offers top performance at a low kit form price

$329.95 35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

Here's the AR-1429 — a stereo receiver with specs that mean true PROFESSIONAL performance! With the low distortion figure of 0.1%, the sound is so pure and clean, you won't believe it costs so little.

A true complementary symmetry power amplifier provides minimum distortion even at high power levels. An improved FM-PLL stereo demodulator provides excellent stereo reception. Ceramic filters are used for distinct station selection. Signal-strength and center-channel meters make tuning easy and accurate.

The AR-1429 has many features of higher-priced units. Two high-level imputs, a magnetic phono input and pre-amp out/power-amp in jacks for audio accessories. A tape monitor lets you make professional style recordings. And for private listening, there's a convenient front panel stereo headphone jack. Accepts optional AD-1504 Dolby FM Module (see below). Metal case with solid walnut end panels makes the AR-1429 a beautiful addition to any decor.

Kit AR-1429, Shpg. wt. 32 lbs. **329.95**

Optional Dolby FM Module. Provides the reduced noise and increased dynamic range of the Dolbyized FM broadcasts now offered by many stations.

Kit AD-1504, Shpg. wt. 1 lb. **39.95**

AR-1429 SPECIFICATIONS: AMPLIFIER — Frequency Response: −1 dB, 5 Hz to 45 kHz. **Damping Factor:** 60. **Input Sensitivity:** Phono, 2 mV; Aux. Tape and Tape Mon., 200 mV. **Hum and Noise:** Phono, −65 dB (−79 dB for 10 mV input); Aux., Tape and Tape Mon., −75 dB. **Input Overload:** Phono, 90 millivolts; Aux., Greater than 10V; Tape, Greater than 10V; Tape Mon., Greater than 10V. **FM SECTION — Sensitivity:** 1.8 μV* (10.3 dbf) usable, 4.0 μV (17 dbf @ 50 dB signal to noise). **Selectivity:** 65 dB. **Capture Ratio*:** 1.8 dB; **AM Suppression*:** 48 dB; **Image Rejection:** 90 dB*. **Stereo Separation:** 40 dB, typ. at 1000 Hz. **AM SECTION — Sensitivity:** 10 μV. **Selectivity:** 20 dB. **Power Requirement:** 120/240 VAC, 50/60 Hz. **Dimensions:** 4¾" H x 20" W x 13½" D.
*Rated IHF (Institute of High Fidelity) Standards. Dolby is a trademark of Dolby Labs.

The AR-1219 AM/FM Stereo Receiver — "Expensive" Performance — Low Kit Price

$189.95 15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

The AR-1219 is a low cost receiver with expensive looks and features — the right choice for your first system. When it comes to giving you performance at an economical price the AR-1219 is hard to beat! That's because we've taken years of audio engineering experience and designed them into a simple, low-cost receiver that really performs. Our careful engineering ensures that annoying colorations and imperfections, evident in many low cost systems, just aren't there.

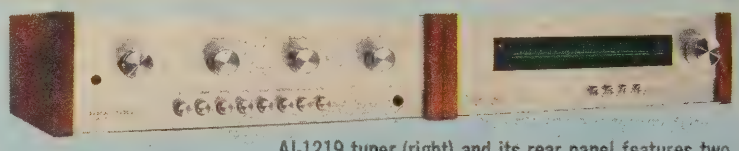
Impressive features the AR-1219 offers are: rear panel jacks for easy access to all inputs and outputs and clearly labeled speaker connections to avoid confusion. A swivel-mounted antenna provides excellent AM listening and there are connections for an external 75- or 300-ohm FM antenna. For extra convenience, there's a tape monitor and a headphone jack with speaker disconnect switch.

Quality AM and FM tuner sections exhibit performance and specifications almost unheard of in receivers in this price class. An extra-wide slide rule dial assures easy tuning for both AM and FM. And a stereo pilot lamp alerts you to stereo FM reception. The AR-1219 is easy to build even for a first-time builder. Metal case with brushed aluminum front panel and stained walnut-veneer end panels.

Kit AR-1219, Shpg. wt. 18 lbs. **189.95**

AR-1219 SPECIFICATIONS: AMPLIFIER — Frequency Response: ±1 dB, 7 Hz to 100 kHz. **IM Distortion:** less than 0.5%, full power; less than 0.2% at 1 watt. **Damping Factor:** Greater than 30. **Input Sensitivity:** Phono: 2 millivolts; Tape: 190 millivolts; Tape Monitor: 190 millivolts. (NOTE: Input sensitivity is the rms input voltage needed to obtain 15 watts of output power per channel into 8Ω loads.) **Input Overload:** Phono: Greater than 75 millivolts; Tape: Greater than 2.5 volts; Tape Monitor: Greater than 2.5 volts. **Hum and Noise:** Phono, −60 dB; Tape, −65 dB. **FM SECTION: — Sensitivity:** 2 μV*. **Selectivity:** 60 dB*. **Image Rejection:** 50 dB*. **Stereo Separation:** 40 dB typ., 35 dB minimum. **Signal to Noise*:** 65 dB (65 dB). **AM SECTION — Sensitivity:** 100 μV per meter*. **Selectivity:** 40 dB. **Power Requirements:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅞" H x 17" W x 13" D.
*Rated IHF (Institute of High Fidelity) Standards.

15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz



AJ-1219 tuner (right) and its rear panel features two AC outlets (switched and unswitched), phono and tuner inputs, tape, tape monitor, and tape out jacks for outstanding recordings with both cassette and reel-to-reel decks!

Kit AA-1219, Shpg. wt. 15 lbs. **119.95**

AA-1219 SPECIFICATIONS: Frequency Response: ±1 dB, 7 Hz to 100 kHz. **IM Distortion:** less than 0.5% at full power; less than 0.2% at 1 watt. **Hum and Noise:** −65 dB. **Power:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅞" H x 12¾" W x 12" D.

Budget-priced AA-1219 Stereo Amplifier

An economical basis for your stereo system, the AA-1219 features the same excellent specifications found in the amplifier section of the AR-1219 Receiver. Intermodulation distortion is less than 0.5% at full power and less than 0.2% at 1 watt. Phono hum and noise are −60 dB, channel separation 55 dB — specifications truly deserving the term "high fidelity". The amplifier matches the styling of the

AJ-1219 AM/FM Stereo Tuner

The AJ-1219 has everything you'd expect to find in a tuner costing far more. The pre-assembled and aligned FM front end provides 2 μV sensitivity with extremely low cross modulation and virtually no overload, even on strong signals. A phase-lock-loop multiplex circuit provides excellent stereo separation with minimum distortion. Handsome metal case with stained walnut-veneer end panels. If your budget is limited, but you still want outstanding performance, the AJ-1219 is the stereo tuner for you.

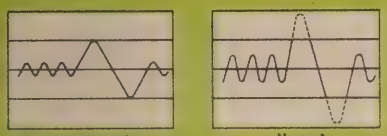
Kit AJ-1219, Shpg. wt. 12 lbs. **119.95**

AJ-1219 SPECIFICATIONS: FM Sensitivity: 2 μV. **Selectivity:** 60 dB. **Capture Ratio:** 2 dB. **AM Suppression:** 50 dB. **Stereo Channel Separation:** 40 dB typ., 35 dB min. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅝" H x 13" W x 11" D.

Why you need a "Superamp"

Many audio systems need a "super-amp" like the AA-1640 for good scientific and musical reasons. As sounds become louder, the ear becomes less sensitive. For one sound to seem twice as loud as another (20 dB louder), requires 10 times as much power. A 3 dB change is just noticeable, yet it requires twice as much power!

In an average-sized room, acoustic suspension speakers may require 20 watts per channel to produce a reasonable listening



unclipped clipped

level — about 90 dB. But when a momentary musical peak of 10 dB comes along, your amplifier must try to produce 200 watts per channel. Tone controls, loudness circuits, and equalizers make the same demands. And if your amplifier is unable to deliver that much power, it clips off the peaks of the signals.

Clipping causes distortion and reduces the dynamic range — the contrast between loud and soft passages. Music sounds constricted, harsh and unreal. Clipping also produces harmonics which can actually damage the tweeters of your speaker system.

A high power amplifier can make a big difference. Its wider dynamic range lets more of the live-performance realism come through loud and clear. Perhaps the most striking difference you'll hear is the improved definition of your music... solid bass free of "boom" and distinct note for note... accurate treble clearly defined and open.

If you have top-quality, low-efficiency acoustic-suspension speakers, a super-amp" like the Heathkit AA-1640 can help them deliver their finest sound.



For the true Audiophile — The Heath AA-1640 Stereo Amplifier

$429.95
Less Meters

200 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

The AA-1640 is an amplifier for the audiophile who constantly strives for musical reproduction free from imperfection and coloration. It features distinctive styling, excellent specifications, and a unique combination of power and features which offer the ultimate in musical reproduction and the maximum in system protection.

The AA-1640 utilizes a unique speaker protection system which does not connect your speaker at turn-on until transients have decayed, and immediately disconnects them at turn-off. It also disconnects speakers when dangerous DC voltages and very low frequencies are present and prevents them from reaching and damaging your expensive speaker systems. The electronics found in the AA-1640 have but one purpose — clean, flawless reproduction of musical information. The amplifier inputs provide optimum matching and maximum preamplifier-to-power amplifier signal transfer. 8 output devices per channel and massive side mounted heat sinks develop maximum power and efficient cooling without need of noisy fans. Both channels are fused and current — limited for protection, should an external short occur.

The result of these painstaking efforts is an amplifier capable of reproducing both quiet passages and thundering fortissimos — all with equal ease and definition. Frequency response is flat within −1 dB from 7-50,000 Hz, total harmonic distortion infinitesimal, and hum and noise inaudible.

For more precise control add the optional peak-responding panel meters to your 1640. Sensitive enough to respond to peaks as short as a record click, the meters feature backlighted scales, and calibration from −30 to +3 dB and 0.2 to 200 watts (into an 8 ohm load). Install the meters after assembly or save $39.95 by purchasing them with your amplifier.

Kit AA-1640, Less Meters, Shpg. wt. 72 lbs.
UPS only 429.95

Kit AAA-1640-1, Output meters,
Shpg. wt. 3 lbs. 59.95

SAVE! Kit AAS-1640, Amp and Meter together.
Shpg. wt. 83 lbs. 449.95

OTHER AA-1640 SPECIFICATIONS: Frequency Response: −1 dB, 7 Hz to 50 kHz; −3 dB, 5 Hz to 100 kHz. **Intermodulation Distortion:** less than 0.1% from 0.25 to 200 watts. **Damping Factor:** greater than 50. **Hum and Noise:** Less than 400 μV or 100 dB below full output. **Channel Separation:** 50 dB, min. **Input Impedance:** 50k ohms. **Input Sensitivity:** 1.5 V. **Net Weight:** 58 lbs. **Dimensions:** 19" W x 7¼" H x 18" D. **Power Requirement:** 120 VAC, 60 Hz only.

AP-1615 Stereo Preamplifier

The Heathkit AP-1615 offers the kind of specifications and features normally found on preamps costing much more. Harmonic and IM distortion are insignificant, less than 0.05%. And extremely wide dynamic range,. 100 dB for all inputs, means that even the loudest and most complex musical passages come through with minimum distortion. For tonal balance, the optional AD-1305 offers far more versatility and precise tone adjustment than ordinary bass and treble controls. A relay instantly mutes the output when power is turned on or off to prevent "thumps." A sub-sonic filter eliminates the noise from turntable rumble or record warp. Has high-frequency filter, two phono inputs, aux. and tuner inputs, tape monitor, mono switch, headphone jack and front panel dubbing inputs and outputs. Handsome



The perfect Stereo Preamplifier for your AA-1640

$129.95

HEATH charg-a-kit REVOLVING CHARGE

styling too, with brushed aluminum front panel, black metal top and solid walnut end panels. The AP-1615 is an easy kit to build. Parts mount on a single printed circuit board, and point-to-point wiring is kept to a minimum. Even if you're a first-time kit builder, you can build a better preamp than you probably thought you could afford.

Kit AP-1615, Shpg. wt. 12 lbs. 129.95

AP-1615 SPECIFICATIONS: Input Sensitivity: Phono, 2 mV. Hi-Level 180 mV. **Input Overload:** Phono, over 100 mV, Hi-Level, over 10 V. **Hum and Noise:** Phono, −65 dB (2 mV input); Hi-Level −85 dB (180 mV input). **Frequency Response:** Phono, ±0.5 dB, 30 Hz to 15 kHz. Hi-Level, ±.2 dB, 20 to 20 kHz. **Rated Output:** 1.5 V at rated sensitivity. **Tape Output:** 180 mV. **Channel Separation:** 50 dB at 1 kHz. **Power Requirement:** 120/240 VAC, 60/50 Hz, 25 watts. **Dimensions:** 4½" H x 17½" W x 8⅛" D.



Active Audio Processor reduces noise, expands range for better, more realistic sound

$199.95

7 EVENING KIT
Fast, Easy Assembly

Improves the sound of any hi-fi system — reduces background noise and extends dynamic range of most source material — without introducing distortion or coloration to the signal source

Much of the background noise heard in recorded music has its origin in the recording and manufacture of the record (or tape) or during the broadcast process. Even the finest high fidelity systems are not immune to this noise and it is virtually impossible to eliminate completely. The Heathkit AD-1304 can, however, eliminate much of the noise. Specifically, it is designed to both eliminate high frequency noise and add 7 dB of dynamic range expansion to any program source.

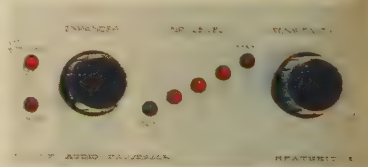
A separate expander section accounts for 7 dB of dynamic range expansion. Of the expander circuit, the January 1978 issue of High Fidelity said: "...the expander circuit in the Heath rates high marks in comparison with other single-band expanders. It gives a subtly enhanced dynamic range that sounds quite natural while remaining unobtrusive in operation." Three high-frequency dynamic filters work in conjunction with a threshold control to discriminate between noise and music for up to 10 dB of noise reduction. For inherently noisy material such as 78-rpm recordings, AM radio or 8-track tapes, a high-filter switch on the front panel activates a 7 kHz, linear phase, 12 dB per octave filter.

LED's on the front panel indicate the amount of noise reduction and dynamic range expansion taking place and front panel controls allow for visually adjusting the thresholds of both the expander and the noise reducer. This method of adjusting the thresholds is quicker and easier than other units which rely on "by-the-ear" adjustments. The AD-1304 connects between the tape output and tape monitor jacks on most types of receivers, preamplifiers and integrated amplifiers. Tape monitor facilities are provided on the back panel of the AD-1304 so that the tape monitor function is not lost. Make the AD-1304 a part of your system today.

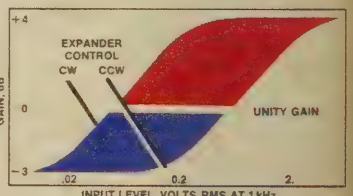
Kit AD-1304, Shpg. wt. 12 lbs. **199.95**



Each Noise Reduction Circuit board operates in its own separate portion of the audio spectrum and is individually triggered to permit filtering in only those frequency bands needed to provide the best sound while maintaining overall frequency response. The dynamic range is boosted and enhanced by the expander circuit board.



The front-panel LED's provide an easy-to-read indication of the AD-1304's operation. −3 dB and +4 dB LED's indicate the expander's gain. When both are equal intensity, gain is unity. Noise Reduction Level LED's indicate the relative amount of noise reduction. All four "on" indicates maximum reduction, while the green LED (lower left) indicates no noise reduction.



Graph shows typical expander gain vs. input level. Shaded area indicates −3 dB and +4 dB limits. 0 dB gain point varies with position of Expander Control.

AD-1304 SPECIFICATIONS: Rated Input: 200 mV. **Input Impedance:** 100K ohms. **Gain:** Expander off, 0 dB (unity) ±0.5 dB. Expander on, −3 dB to +4 dB. **Frequency Response:** +0, −0.2 dB from 20 Hz to 20 kHz. **High Filter:** 7 kHz, 12 dB octave rolloff. **Noise Reduction:** 10 dB typical between 4 kHz and 15 kHz. **Hum and Noise:** −70 dB, 20 Hz to 20 kHz. **Channel Separation:** 50 dB at 1 kHz. **Output Impedance:** 500 ohms. **Input Overload:** 5 volts. **Total Harmonic Distortion:** 0.1% from 20 Hz to 20 kHz. **Power Requirement:** 120/240 VAC, 50/60 Hz, 15 watts. **Dimensions:** 17½" W x 4½" H x 8⅛" D. **Net Weight:** 10 lbs.



AA-18 Solid-State Monophonic Amplifier makes an excellent first-time kit

- **Provides good sound reproduction at a real budget price**
- **Ideal for small music systems anywhere space is limited**

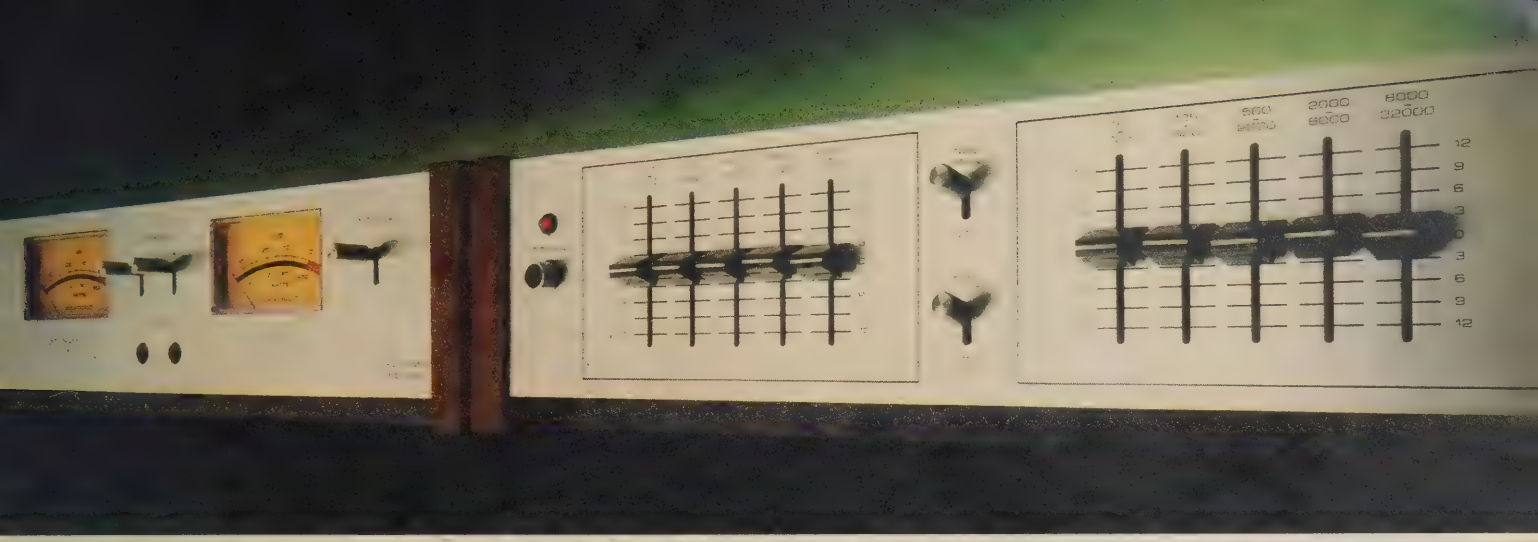
$27.95

3.25 WATTS, MINIMUM RMS, INTO 8 OHMS WITH LESS THAN 1.5% TOTAL HARMONIC DISTORTION FROM 40-20,000 Hz.

Here's an excellent way to get a youngster started in both kitbuilding and music appreciation. The AA-18 provides good-sounding amplification from a variety of music sources — a phonograph with a ceramic cartridge, monophonic AM or FM tuner, even a tape recorder. It can drive an efficient 8-ohm speaker to surprising sound levels for good reproduction, and it works effectively as a headphone amplifier. Has volume and tone controls, power on-off switch and pilot light, front panel headphone jack. Makes an ideal beginner kit too, with open chassis layout, simplified PC board construction and minimal point-to-point wiring. Goes together in just a couple of evenings. With metal case.

Kit AA-18, Shpg. wt. 4 lbs. **27.95**

AA-18 SPECIFICATIONS: Power Requirement: 120/240 VAC, 60/50 Hz. **Dimensions:** 2⅝" H x 7 1/16" W x 5 5/16" D.



Deluxe Audio Control Center provides output monitoring and speaker control for high-powered amplifiers

$119.95

- Peak responding meters monitor power
- Lets you connect two different speaker systems
- Extra headphone jacks

Many stereo hi-fi systems, especially those with medium to high power capabilities, need what the AD-1307 provides; accurate power output monitoring for exact speaker balancing and one-button control of major AC-powered auxiliary components. Peak-responding meters calibrated in both decibels and watts react instantly to outputs as brief as a record click. Because of their quick response and extreme accuracy, these meters are uniquely useful as overload indicators. Their expanded scales let you read from just a few tenths of a watt — up to 200 watts. The output meters provided with most types of receivers and amplifiers fall short of these abilities and are therefore limited in usefulness. A switch on the front panel allows you to monitor the outputs of either of two amplifiers.

Barrier-type terminal strips on the rear panel allow you to hook up one stereo amplifier to two sets of speakers, two stereo amplifiers (or one 4-channel amp) to four speakers, a monophonic amplifier to one or more speakers, and even a pair of electrostatic headphones. Conventional stereo headphones plug into two jacks on the front panel. Four switched and four unswitched AC outlets (with a total of 1500 watts) provide flexible power control of the individual components in your system.

Kit AD-1307, Shpg. wt. 11 lbs. **119.95**

AD-1307 SPECIFICATIONS: Meter Scale Calibration: −30 dB to +3 dB, 0.2 to 200 watts. (0 dB=200 watts into 8 ohms.) **Meter Circuit Type:** Peak Responding. **Meter Circuit Response Time:** Less than 50 μsec. **Meter Circuit Fall Time:** Greater than 0.5 sec. **Power Requirement:** 120 VAC, 50/60 Hz, 10 watts, 240 VAC, 50/60 Hz, 10 watts. **Dimensions:** 4½" H x 17½" W x 8½" D. **Weight:** 8 lbs. (3.6 kg.)

5-band, 2-channel Audio Equalizer lets you control the entire frequency spectrum for exacting system response

$119.95

- Gives you precise tone control
- Compensates for poor room acoustics
- Use as a scratch filter for old recordings

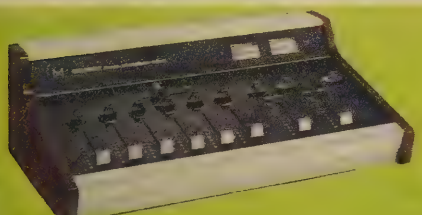
The AD-1305 Audio Equalizer offers complete tone control versatility with five slide controls for each stereo channel. It is designed for use with the AP-1615 preamp, or any receiver or amplifier having a preamp output and power amp input, or tape monitor. Provides precise corrections in each portion of the frequency spectrum, without overlapping. A center detent allows exact "0" dB setting bypassing each band; a tone flat switch bypasses the equalizer entirely.

Compensates for room acoustics, differences in cartridges and speakers, even deficiencies in program sources. Can also be used with tape recorders to filter old or scratchy records or broadcasts before recording. Active bandpass filters with large, fully-shielded coils, ensure extremely low distortion. The AD-1305's own tape monitor lets it be used in a receiver's tape monitor circuit without losing monitor capability.

The AD-1305 is a fun-to-build kit too, even for first-time builders. Parts mount on three circuit boards, and there's minimal point-to-point wiring, so assembly is fast and easy. Case with solid walnut end panels.

Kit AD-1305, Shpg. wt. 11 lbs. **119.95**

AD-1305 SPECIFICATIONS: Input Impedance: 100k ohms. **Output Impedance:** 100 ohms. **Rated Output:** 1.5 V rms. **Overload:** 5 V rms. **Signal-to-Noise Ratio:** 90 dB below 1.5 V. **Total Harmonic Distortion:** 0.05% from 20 Hz to 20 kHz at 1.5 V output. **IM Distortion:** 0.05% at 1.5 volts. **Frequency Control Range:** (separate controls for each channel), 30-125 Hz, 125-500 Hz, 500-2000 Hz, 2000 Hz to 8 kHz, 8 kHz-32 kHz. **Overall Gain (flat):** Zero dB (unity gain). **Slope of Filters:** 12 dB per octave. **AC outlets:** One switched, one unswitched. **Power Requirement:** 120/240 VAC, 60/50 Hz, 10 watts. **Dimensions:** 4⅜" H x 17½" W x 8" D.



TM-1626 SPECIFICATIONS: Frequency Response: 40-20,000 Hz, ±1 dB. **Distortion:** 0.5% maximum at outputs from 50 mV to 6.5 volts. **Output Impedance:** 150 ohms. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts maximum. **Dimensions:** 5¾6" H x 16" W x 9⅞" D.

Versatile Stereo Mike Mixer Console

Wide frequency response and low distortion give you clean, life-like mixing capability. Each of the TM-1626's two outputs has its own master level control and meter. The six inputs include two high-level auxiliary inputs and four mike inputs. 60 dB gain permits use with most any type of microphone. The fourth microphone input has a "pan" control to adjust its apparent location from left to right. All six inputs can be individually switched to left, off, or right channel. Has output meters and LED peak indicators. Case with walnut-veneer end panels.

Kit TM-1626, Shpg. wt. 12 lbs. **139.95**

Save on our hi-fi system discounts

You can save an additional 5% by ordering a complete hi-fi system from Heath. 1) choose a receiver and a pair of speakers or 2) an amplifier, pair of speakers and a program source such as a turntable tuner or tape deck, add up the total cost and deduct 5% (excluding shipping and handling charges). Now the "sound" choice is even more economical! Look over our entire selection of components, turntables, speakers and accessories on pages 28-38.

There's a Heathkit Speaker System for Every

A New State-of-the-art LINEAR PHASE 3-way Speaker System

$569.95 Sold in Pairs Only

- **Designed for minimum transient distortion — an improvement in sound reproduction you can really HEAR**
- **Maintains good stereo imaging regardless of positioning**



The ASX-1383 uses the same revolutionary design principle found in speakers costing up to $1000 and more. This linear phase design aligns each driver's radiating surface in the same plane so that the entire sound output — bass, treble and midrange frequencies — reaches your ears at the same time. The result is a clarity and richness of sound and reproduction of transients (which is what music is) that you simply have to hear to believe.

Another contribution to the ASX-1383's great sound is its unique compound curved baffle. This curved baffle eliminates edges and corners which can produce defraction, which causes transient distortion and ragged frequency response. The result is a spaciousness and open sound combined with outstanding stereo dispersion and stereo imaging. You'll get great sound and excellent stereo definition no matter where you sit in your listening room.

The drivers used in the ASX-1383 provide full frequency response with excellent dynamic range. The ASX-1383 uses a 10" high-compliance long-throw woofer, a 5" high compliance long-throw midrange and a soft-dome high-compliance 1" tweeter. The soft-dome tweeter provides the smoothest high frequency response of any tweeter we've seen. A linear phase, constant-voltage crossover network distributes frequencies smoothly and evenly without altering the system's phase response. The speaker elements are arranged for minimum line height (the entire distance from woofer voice coil to tweeter voice coil) to approximate a single-point sound source for increased dispersion and sound realism at all frequencies. This ensures good sound and stereo imaging regardless of listening position. Each speaker is individually fused for protection.

The ASX-1383 has been designed to look as great as it sounds too. The cabinet is select Brazilian rosewood veneer with a center-book-matched front panel for an elegant look in any decor. A charcoal black "acoustically transparent" grille cloth complements the cabinet. Sold in matched pairs only. We believe they're the finest speakers you can buy at any price!

Kit ASX-1383, 114 lbs. Motor Freight . . . **pair 569.95**

ASX-1383 SPECIFICATIONS: Frequency Range (−10 dB): 30 Hz to 30 kHz. **Frequency Response:** ±3 dB, 40 Hz to 25 kHz. **Impedance:** 8 ohms. **Recommended Amplifier Power:** 10 watts minimum to 200 watts (fused for larger amplifiers). **Crossover Frequencies:** 750 Hz, 4000 Hz. **Fuses:** Woofer, 1 amp slow-blow; midrange, ½-amp slow-blow; tweeter, ½-amp regular. **Dimensions:** 36" H x 13½" W x 13¼" D. **Weight:** 50 lbs.



2-way Sound Column Speaker System with omnidirectional sound pattern

$139.95 each **$239.95 pair**

Here's a speaker that will sound just as outstanding no matter where you sit in the room. Two 1" dome tweeters and two 6½" full-range drivers are mounted in separate woofer-tweeter arrays on adjacent sides of the cabinet to maintain well-balanced sound. The woofers are located well above the floor, so bass response is solid and well-defined. There is no mid-bass boom or resonance, so mid-frequencies come through loud and clear. The tweeters deliver a full 10 to 20 dB more off-axis response than conventional tweeters for bright, clean highs — and their amazing 270° dispersion pattern maintains a well-balanced stereo image regardless of speaker placement. Has a nominal 4 ohms impedance, so most amplifiers will deliver up to TWICE their rated 8 ohm power. Separately fused woofers and tweeters, flat/-3 dB level control. Light walnut-vinyl finish on all four sides, simulated black slate top and acoustically transparent foam grille.

Kit AS-1344, 57 lbs. UPS . . . . . **each 139.95**
Kit AS-1344-2, 122 lbs. UPS . . . . . **pair 239.95**

AS-1344 SPECIFICATIONS: Frequency Range (−10 dB): 35 Hz to 22 kHz. **Frequency Response:** ±3 dB, 55 Hz to 20 kHz. **Impedance:** 4 ohms minimum. **Recommended Amplifier Power:** 6 watts min. to 100 watts (fused for larger amplifiers). **Crossovers:** 4000 Hz mechanical (on woofer) and 12 dB/octave electrical on tweeter. **Fuses:** 1½-amp Slow-Blow for woofers, 1 amp regular for tweeter. **Control:** 2 position tweeter level, flat and −3 dB. **Dimensions:** 40" H x 11" W x 11" D. **Weight:** 45 lbs.



High-Efficiency 2-way Speaker System ideal for smaller music systems

$69.95 each **$129.95 pair**

The AS-1342 doesn't need much amplifier power to provide great sound so if you have a small system, this is the speaker for you. Uses an 8" woofer and a 2x6" horn-type tweeter that can be mounted for best high-frequency dispersion whether you place the system horizontally or vertically — a Heath exclusive! A 12 dB per octave crossover minimizes distortion and insures smooth response. Has a continuous tweeter level control. Factory-assembled walnut-finish vinyl-covered enclosure with 3-dimensional grille cloth.

Kit AS-1342, Shpg. wt. 32 lbs. UPS . . . . . **each 69.95**
Kit AS-1342-2, Shpg. wt. 78 lbs. UPS **129.95**

AS-1342 SPECIFICATIONS: Frequency Range (−10 dB): 40 Hz to 16 kHz. **Frequency Response:** ±3 dB, 60 Hz to 14 kHz. **Impedance:** 8 ohms nominal. **Recommended Amplifier Power:** 4 watts min. to 25 watts (fused for larger amplifiers). **Crossover Frequency:** 2500 Hz (12 dB/octave). **Dimensions:** 22¼" H x 12" W x 10½" D. **Weight:** 20 lbs.

Listening Need and Budget!

Our best-selling 3-way Speaker System for shelf or floor use

$159.95 each $299.95 pair

A truly outstanding floor/shelf speaker system, for use with even the finest components. The 10″ woofer provides solid, well-defined bass. The 4½″ midrange is isolated in its own polyester-damped subenclosure to prevent distortion caused by woofer vibrations and reflections. The 1″ dome tweeter provides excellent power handling and definition, and features horizontal dispersion of a full 120° even at 12,000 Hz. All three drivers are flush mounted, and there are no "rails" around the cabinet to limit treble dispersion. For best stereo imaging, you can position the tweeter directly above the midrange whether you position the system vertically or horizontally — a Heath exclusive! Has individual fusing for each driver, two high-frequency controls to match response to your listening area. Fully assembled walnut-finish veneer cabinet with deluxe, acoustically transparent foam grille. 26″ H x 14½″ W x 11⅞″ D. 8 ohms impedance.

Kit AS-1373, 68 lbs. UPS **159.95**
Kit AS-1373-2, 141 lbs. UPS ..... **pair 299.95**

AS-1373 SPECIFICATIONS: Frequency Range (—10 dB): 30 Hz to 22 kHz. **Frequency Response:** ±3 dB, 40 Hz to 20 kHz. **Impedance:** 8 ohms. **Recommended amplifier power:** 11 watts min. to 200 watts. (fused for larger amplifiers). **Crossover frequencies:** 500 Hz (12 dB/octave) and 3000 Hz (12 dB/octave). **Fuses:** Woofer, 1¼ amp Slow-Blow; midrange, ¾-amp Slow-Blow; tweeter, ½-amp regular. **Controls:** 3 kHz shelf/flat; 10 kHz rolloff/flat. **Dimensions:** 26″ H x 14½″ W x 11⅞″ D, without 1¼″ grille. **Weight:** 47 lbs.



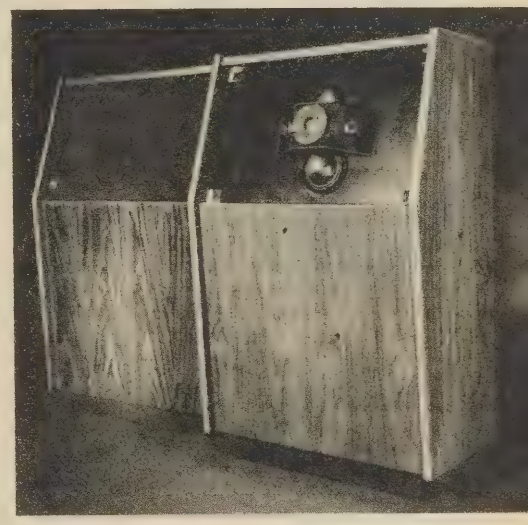
Our "High-Power" 3-way Speaker System with massive 15″ slot-loaded woofer

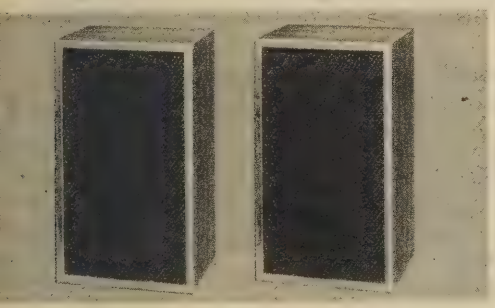
$289.95 each $539.95 pair

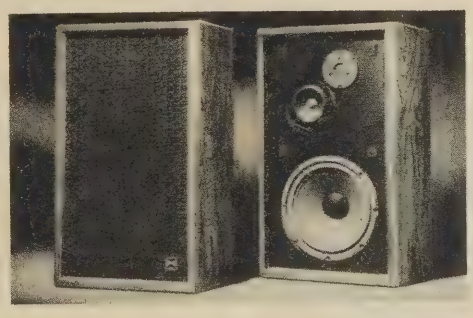
Designed for use with the finest stereo components, the AS-1348 offers the bass power and extra wide dynamic range you want to reproduce any kind of music realistically. Combines a massive 15″ slot-loaded woofer, two 4½″ midrange speakers and three 1″ tweeters in a precision-designed cabinet. Has dynamic range from below 30 Hz to above 20 kHz. The woofer is mounted in the rear of the cabinet to improve low-frequency response. The two midrange drivers radiate directly forward for excellent presence and realism. The three tweeters face forward, angle right and angle left for high-frequency response with outstanding dispersion. While most conventional speaker systems produce maximum sound levels only at upper bass and midrange frequencies, the AS-1348 produces very high sound levels without distortion at ALL audible frequencies. Has individual fuses for woofer, midranges and tweeters, 14 position attenuation controls for adjusting response characteristics to any listening area. Fully assembled, acoustic-suspension enclosure with walnut and oak veneer finish. Acoustically transparent grille cloth is removable. The AS-1348 does justice to the finest stereo systems in both sound and appearance. That's why they're our finest speakers. 38″ H x 24″ W x 15″ D, 8 ohms impedance.

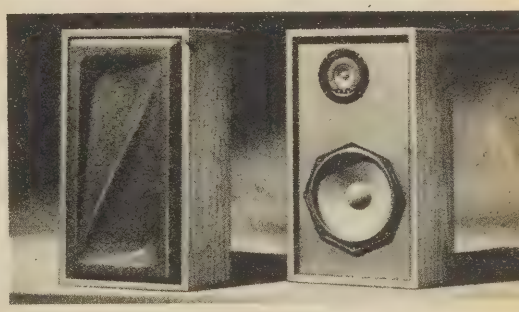
Kit AS-1348, 110 lbs. Motor Freight **289.95**
Kit AS-1348-2, 220 lbs. Motor Freight **539.95**

AS-1348 SPECIFICATIONS: Frequency Range (—10 dB): 22 Hz to 22 kHz. **Frequency Response:** ±3 dB, 28 Hz to 20 kHz. **Impedance:** 8 ohms nominal. **Recommended amplifier power:** 8 watts min. to 250 watts (fused for larger amplifiers). **Crossover frequencies:** 500 Hz (12 dB/octave) woofer-to-midrange and 3000 Hz (6 and 12 dB/octave) midrange-to-tweeter. **Fuses:** Woofer, 1½-amp Slow-Blow; midrange, ⅜-amp Slow-Blow; tweeter, 1-amp regular Blow. **Dimensions:** 38″ H x 24″ W x 15″ D. **Weight:** 100 lbs.









Compact Bookshelf Speakers

Quality speakers ideal as extensions or for use in smaller compact-style stereo systems. 4½″ full-range foam-suspension speaker has a full-bodied 70-16,000 Hz response and good, clean sound. Good-looking walnut-grain vinyl-clad enclosures make a nice addition to most any room decor. Only 12″ H x 7″ W x 6″ D, ideal for smaller rooms, college dorms, or as extension speakers, 8 ohms impedance. Sold in pairs only.

Kit AS-1140, Shpg. wt. 16 lbs. ..... **per pair 37.95**

Full-range 3-way Speaker System

The AS-1363 is a full-range 3-way speaker system that uses a 10″ woofer, a 4½″ midrange speaker and a 1″ dome tweeter. Two-position midrange and tweeter switches let you adjust the AS-1363's sound to suit any listening room. Impedance is 8 ohms. The factory-assembled cabinet features a handsome pecan-veneered Mediterranean finish and hardwood trim. 24¾″ H x 14¼″ W x 11½″ D.

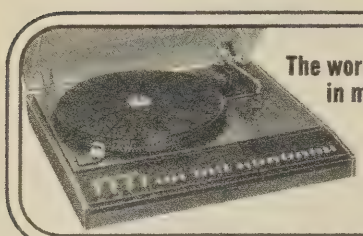
Kit AS-1363, 55 lbs. UPS ..... **each 119.95**
Kit AS-1363-2, 128 lbs. UPS ..... **pair 219.95**

Low-priced 2-way Speaker System

An excellent choice for low to medium priced music systems or use them as extension speakers. Has an 8″ woofer with a hefty 1 lb. ceramic magnet and a 1¾″ phenolic ring tweeter. Can be driven by as little as 9 watts, but handles up to 50 watts. Has individual driver fuses and tweeter level control for high frequency adjustments. Factory-assembled walnut-grain vinyl-covered enclosure.

Kit AS-1332, 29 lbs. UPS ..... **each 54.95**
Kit AS-1332-2, 63 lbs. UPS **99.95**

Fully-assembled Turntables and Cassette Recorders

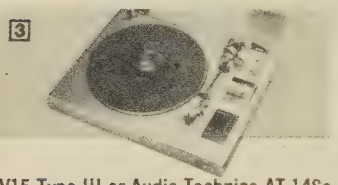


The world-famous Accutrac® 4000 is now in money-saving kit form from Heath

The Accutrac 4000 lets you "program" individual cuts on your records in the order you want to hear them. See page 3 for details.







NEW B·I·C VIA Series Automatic Turntables

Introducing the new B•I•C series of turntables! An advanced design series incorporating the special B•I•C triple-tier Variable Isolation Adjustment which virtually eliminates rumble and lets you adjust the turntable to your particular needs to eliminate feedback! The VIA turntables have variable speed control and readout which lets you adjust the system to control feedback. A heavy rigid base supports the motor and includes the exclusive suspension system with a control that lets you "tune out" acoustic feedback. All feature precision straight-line tonearms with minimum mass and maximum length for excellent tracking accuracy and lowest distortion. All feature heavy counterbalanced turntable platter, hinged dust cover and 9" jeweled bearing tonearms. All include base, specify Empire 2000E/111 or Shure M91ED cartridges. Add $45 for Shure V15 Type III or Audio-Technica AT-14Sa; add $75 for Shure V-15 Type IV.

1 **B•I•C 912C.** Fully automatic single-play unit with friction-hinged removable dust cover, 9" tonearm and variable speed with strobe readout. Specify your choice of cartridge.
ACP-1282, Shpg. wt. 21 lbs. **149.95**

2 **B•I•C 914C.** As above, with true dynamically balanced tonearm and plug-in tonearm head shell for easy cartridge change. With base and dust cover, specify cartridge.
ACP-1283, Shpg. wt. 20 lbs. **169.95**

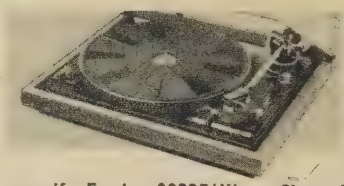
3 **B•I•C 918C.** As above with advanced MICROPROCESSOR-BASED digital drive system, deluxe speed readout, two motor drive system and carbon-fiber tonearm. With base, dust cover, specify cartridge.
ACP-1284, Shpg. wt. 22 lbs. **289.95**
ADP-1165, 45-rpm spindle for above. Shpg .wt. 1 lb. **3.95**



Deluxe Scotch® Master™ Series Cassettes

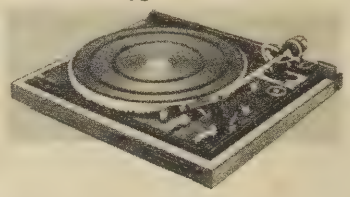
Whether you're looking for expanded dynamic range with normal bias; extra-high and low-frequency response with chrome (CrO_2) bias; or increased low- and high frequency sensitivity with ferri-chrome (FeCr) bias — there's a Master Series cassette for you!

Stock No.	Master Series	Type of Bias	Playing Time	Shpg. Wt.	Pkg. of 4
ADP-1904	MI-C90	Normal	90 min.	1 lb.	15.95
ADP-2604	MII-C60	CrO_2	60 min.	1 lb.	13.95
ADP-2904	MII-C90	CrO_2	90 min.	1 lb.	17.95
ADP-3604	MIII-C60	FeCr	60 min.	1 lb.	13.95
ADP-3904	MIII-C90	FeCr	90 min.	1 lb.	17.95



NEW Dual Automatic Turntable

CS1246. Fully automatic single/multiple-play turntable has 4-point gimbal-mounted 8¾" tonearm, anti-resonance filters, high-torque synchronous motor and precision-machined die-cast platter. Ground-belt and Vario-pulley drive system. With base and dust cover, specify Empire 2000E/III or Shure M91ED cartridge. Add $45 for Shure V15 Type III or Audio-Technica AT-14Sa. Add $75 for Shure V15 Type IV.
ACP-1246, Shpg. wt. 19 lbs. **229.95**



Dual 721 Automatic Turntable

One of the finest turntables available. Features fully automatic single-play, electronic direct-drive motor, twin gimbal tonearm mounting, adjustable tonearm height, calibrated anti-skate, dynamically-balanced die-cast turntable platter. Other features include: illuminated strobe, adjustable vertical tracking angle, rotating single-play spindle, two-way damped cue control. With base and dust cover, Shure V15 Type III cartridge.
ACP-1217, Shpg. wt. 25 lbs. **389.95**

Famous-Brand Stereo Cartridges from Heath

These quality cartridges are recommended by Heath to help you get the best sound from your records. Choose the cartridge that best meets your needs from the table below. Order one with a Turntable and SAVE!

Model	Response (Hz)	Output	Separation	Stylus	Tracking	Price Alone	With Turntable
ADP-1062, Wt. 1 lb. Shure M91ED	20-20,000	5.0 mV	25 dB	Ellipt. 0.2 x 0.7	¾ to 1½ gr.	59.95	FREE
ADP-1147, Wt. 1 lb. Empire 2000E/111	20-20,000	4.5 mV	28 dB	Ellipt. 0.2 x 0.7	½ to 1½ gr.	69.95	FREE
AD-1059, Wt. 1 lb. Shure V-15 Type III	10-25,000	3.5 mV	28 dB	Ellipt. 0.2 x 0.7	¾ to 1¼ gr.	85.00	45.00
ADP-1139, Wt. 1 lb. Audio-Tech. AT-14Sa	5-45,000	2.7 mV	25 dB	Shibata	¾ to 1¾ gr.	85.00	45.00
ADP-1259, Wt. 1 lb. Shure V-15 Type IV	10-25,000	4.0 mV	25 dB	Ellipt. 0.2 x 0.7	¾ to 1¼ gr.	150.00	75.00

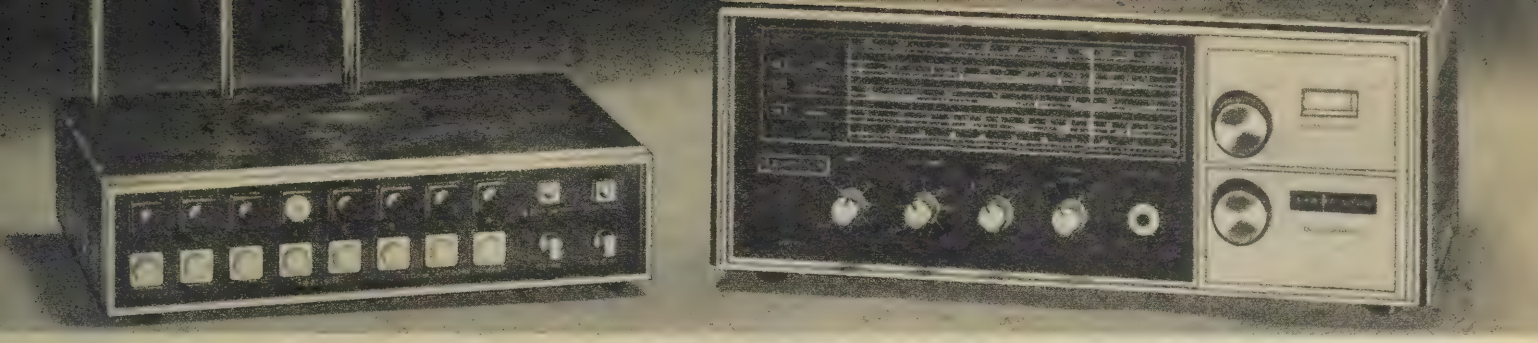
4 Fully assembled Aiwa AD-1250 cassette deck with Dolby®

Ultra-modern design and the features you need for top-quality recordings including an oil-damped cassette ejection system for smooth, noiseless ejection, large VU meters and LED peak indicator for precision recording levels on all types of material and, of course, Dolby noise reduction for greatly reduced-tape hiss and background noise. Piano-type keys give a light but positive action. A mechanical pause key is separate from other keys for quick identification and operation. Separate 3-position bias and equalizer switches allow for optimum recording with conventional, CrO_2 or FeCr tapes.
ATP-1233, Fully assembled. Shpg. wt. 15 lbs. **249.95**

5 Fully assembled Aiwa 6550 deluxe Dolby® cassette deck

If you're looking for professional features in a cassette deck, then the Aiwa 6550 is for you. Features continuous readout of time remaining on tape, separately selectable 3-position switches for proper bias and equalization from all types of tapes. Shocks and vibration in the tape unit are kept to a minimum by the oil damped gears. A high efficiency drive system keeps wow and flutter to a low 0.05% (WRMS). Two-step peak indicator lamps supplement the VU meters to display over-level input during the recording process. Other features include memory rewind mechanism, quick review/cue, Ferrite Guard Head, 3.4 mW headphone jack output and removable cassette cover.
ATP-1244, Fully assembled. Shpg. wt. 25 lbs. **449.95**

Dolby is a registered trademark of Dolby Labs.



There's a world of excitement waiting for you locally...or around the world

SAVE $10! GR-1132 3-Band VHF/UHF Scanner

Monitor fire calls, police, ambulances, Amateur 2-meter FM, marine emergency vehicles, gov't weather stations, more. It automatically scans each channel, stopping on any signal, then resumes scan after broadcast. Priority feature — checks priority channel every 4 seconds. 4-pole crystal filter (for even better selectivity in crowded signal areas, order the optional 8-pole filter, below); channel lockout buttons; extra-large lighted channel indicators. Telescoping antennas for each band, provision for external antenna. Built-in speaker, volume and squelch controls. AC and 12 VDC power supplies. Order crystal certificates below.

Kit GR-1132, Shpg. wt. 9 lbs. .....Was 129.95 **Now 119.95**

Scanner Antenna. VHF & UHF. For masts 1½" dia. SO-239 receptacle.
GRA-1132-1, Shpg. wt. 2 lbs. 22.95

GRA-1131-1, Mobile Mounting Bracket, Shpg. wt. 1 lb. 3.95

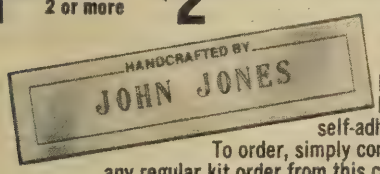
Crystal Certificate. You send to crystal mfr. with specific frequency. Crystal is returned postpaid. Order one for each frequency. **GRA-1100-1** .....each 4.95

GRA-1100-2, 8-pole crystal filter, Shpg. wt. 1 lb. 9.95

GR-1132 SPECIFICATIONS: Scanning Range: LO-VHF, any 10 MHz segment of 30-50 MHz frequency range. HI-VHF, any 8 MHz segment of 146-174 MHz frequency range. UHF, any 8 MHz segment of 450-500 MHz frequency range. **Sensitivity:** Lo and Hi VHF: 0.5 μV or less for 12 dB SINAD. UHF: 0.7 μV or less for 12 dB SINAD. **Adjacent Channel Rejection:** (30 kHz channel spacing) –40 dB typ. (–55 dB typ. with optional 8-pole filter). **Scan Rate:** approx. 16 channels per second. **Scan Delay:** approx. ½ second. **Priority Channel Check:** approx. 4 seconds. **Antenna Impedance:** 50 ohms. **Audio Output:** AC operation, 1 watt; DC operation, 2 watts; less than 10% distortion. **Power Requirement:** 120 VAC, 60 Hz. 12 watts or 13.8 VDC, 300 mA squelched; 500 mA at full output. **Dimensions:** 3¾" H x 8½" D x 11¼6" W. **Net Weight:** 5 lbs.

Personalize your kits with this Engraved Name Plate

$1.60 each for 2 or more **$2.00** for one



Personalize each Heathkit project you complete with one of these handsome, engraved name plates. Each is done in solid brass with brushed jeweler's finish and is self-adhesive backed for easy application. To order, simply complete form below and include with any regular kit order from this catalog.

PLEASE PRINT YOUR NAME PLAINLY IN CAPITAL LETTERS USING THE MAXIMUM 14 CHARACTER (INCLUDING SPACES) BOXES PROVIDED BELOW.

Please ship ___ GDP-1225 Name Plates as shown below at $2.00 for one. $1.60 each for two or more (including postage and handling). Name Plates are shipped 1st class mail under separate cover. My total remittance of $_____ is included with the regular Heathkit order form (p. 49) attached.

Name _____

Address _____

City _____

State _____ Zip Code _____

CUT OUT ENTIRE FORM ON DOTTED LINE AND ATTACH TO YOUR KIT ORDER

4-Band Shortwave — just right for the beginner

Tunes foreign broadcasts from all over the globe — amateur and CB radio bands — local and marine weather reports — ships at sea — plus standard AM. Features wide slide-rule tuning dial with logging scale; signal-strength tuning meter; built-in AM rod antenna plus connection for SWL antenna. Also has variable BFO for code reception, built-in speaker, front panel jack for external speaker or headphone, switched automatic noise limiting. Most parts mount on a single circuit board for easy step-by-step assembly.

Kit SW-717, Shpg. wt. 10 lbs. 77.95

Long-wire SWL antenna. Really helps pull in stations. Wire, lead-in, insulators, and hardware all included. **GRA-72,** Shpg. wt. 2 lbs. 4.50

Superex Headphones. Low-cost and ideal for use with the SW-717. 600 ohms.
GD-396, Fully Assembled. Shpg. wt. 2 lbs. 5.95

SW-717 SPECIFICATIONS: Frequency coverage: 550 kHz - 1500 kHz, 1.5 — 4 MHz. 4 — 10 MHz. 10 — 30 MHz. **Meter:** Indicates relative signal strength. **Headphone Jack:** Accepts low impedance headphone or external speaker. **Loudspeaker:** Built-in. **Power Requirement:** 120/240 VAC, 60/50 Hz, 8 W. **Dimensions:** 5⅓" H x 14½" W x 8" D.

Amateur Radio Code Courses on Records or Cassettes

"Tune In The World With Ham Radio" a complete course with code cassettes and license manual. Produced by the ARRL. **HDP-1142,** Shpg. wt. 2 lbs. 7.00

Ameco Junior Code Course. LP with 10 lessons to 8 words-per-minute.
HDP-232, Shpg. wt. 2 lbs. 3.95

Ameco Junior Cassette Code Course. As above, cassette instead of LP.
HDP-432, Shpg. wt. 1 lb. 4.95

Ameco Senior Code Course. Two LP's with lessons to 18 words-per-minute.
HDP-332, Shpg. wt. 2 lbs. 7.50

Ameco Senior Cassette Code Course. As above, cassettes instead of LP's.
HDP-532, Shpg. wt. 1 lb. 8.95

"By the Word" code course. 3 LP's teach speed using "by the word method".
HDP-32, Shpg. wt. 2 lbs. 9.95

Same as above but on 2 cassettes instead of LP records.
HDP-132, Shpg. wt. 1 lb. 9.95



Heathkit Programmable Digital Stopwatch

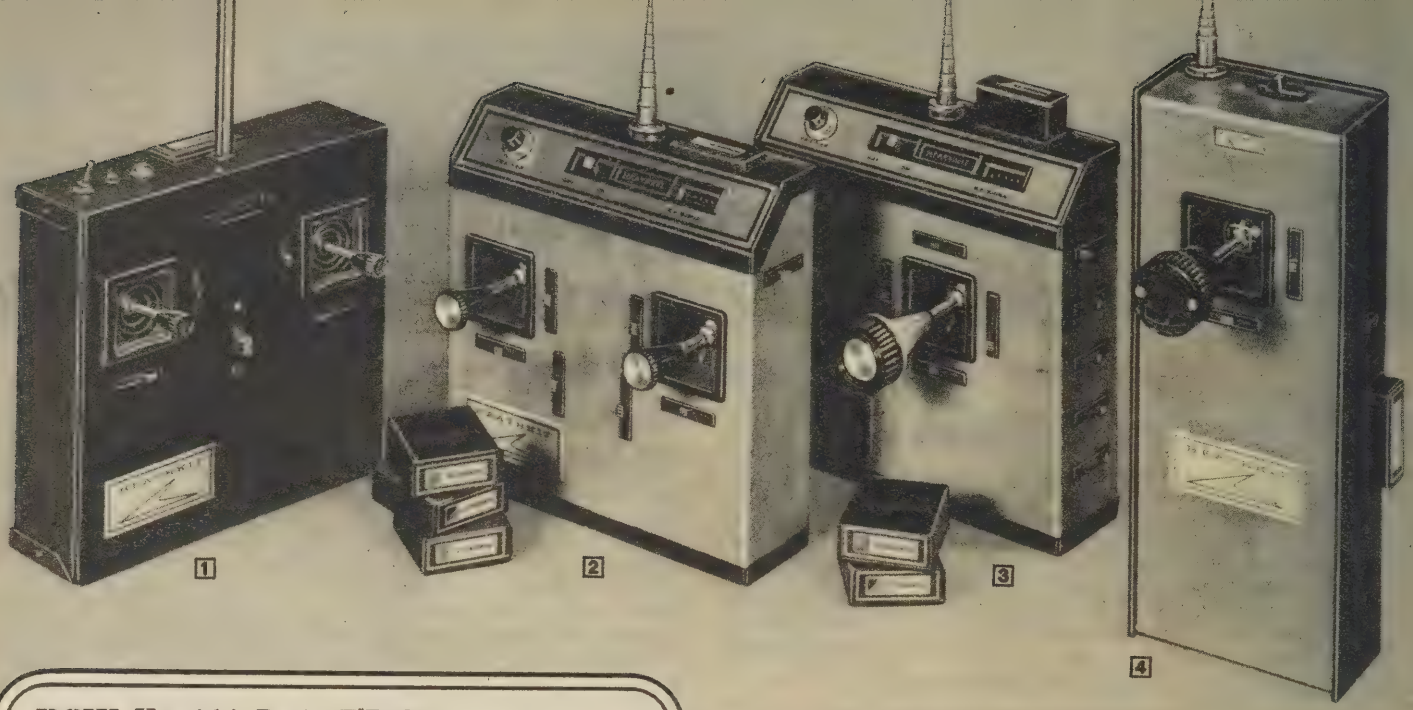
Features start/stop elapsed time, sequential timing, total activity time, and much more!

For features, versatility and accuracy, we don't think you can find a better stopwatch than our GB-1201! Two exclusive Heath PMOS IC counters and quartz crystal accuracy make it ideal for almost any timing job. Reads hours, minutes, tens and hundredths of seconds in a bright red digital readout that's easy to see in most any light. We even include a sunscreen so you can read it in direct daylight! Seven functions time any event; Start/stop elapsed time, sequential timing, total activity time, split time, start/stop activity time, upcount to a preset time, downcount from time.

Includes pre-wired AC adapter/charger, rechargeable batteries, sunscreen, lanyard for wearing the GB-1201 around wrist or neck. Special modification instruction lets you convert the GB-1201 to read hundredths of minutes — perfect for car rallies and time studies. 5⅓" H x 2¼64" W x 2" D.

Kit GB-1201, Shpg. wt. 2 lbs. 84.95

ICA-2009-1, Felt-lined Naugahyde® carrying case, Wt. 1 lb. 3.95



NEW Heathkit Pack-17 R/C-Uncompromised Performance, Value and Quality!

Every Heathkit R/C product is the result of quality design and engineering by people who care about R/C. We were the first to use ceramic filters to help eliminate drift; the first to put 8-channels in a single, versatile and reliable unit; the first to give you the convenience of instant plug-in frequency change. Compare Heathkit R/C with top-of-the-line assembled models — you'll see why Heathkit R/C is your smartest buy! HEATHKIT PACK-17™ R/C gives you the performance and reliability every RC'er wants — PLUS build-it-yourself kit value! The transmitters, receivers and servos have the quality and reliability you NEED for serious R/C competition; the positive-action control sticks are smooth and responsive; and the easy-to-handle transmitters are compact and comfortable. Heathkit R/C is easy and fun to build too — with a thorough and complete instruction manual that even shows you how to solder. Buy and build Heathkit R/C gear — it's the winning way to fly!

NOTE: Amateur Radio License required for operation on 53 MHz band. Class C License required for operation on 27 and 72 MHz bands.

[1] NEW **5-Channel Dual OPEN-GIMBAL STICK R/C Transmitter.** The new GDA-1919-1 is one of our most exciting Radio Control products to come along in years — you won't find the value, reliability and performance of the GDA-1919-1 in ANY other unit in this price range! Here's dual-stick control of four R/C channels (one with ratchet) plus switch-activated aux. channel for retracts or other switched functions. It's ideal for operating R/C planes, cars or boats whether you're a weekend flyer, beginner or experienced "pro." The latest design open-gimbal sticks provide smoothness and control you'll appreciate. Performance-proven circuitry will give you years of reliable, trouble-free operation. Heath's famous plug-in module capability and comprehensive step-by-step instruction manual for easy kitbuilding and do-it-yourself service make this your best R/C value. Transmitter includes your choice of one plug-in frequency module. Order your GDA-1919-1 in a complete system from next page for big savings.

Kit GDA-1919-1, Shpg. wt. 4 lbs. Available Dec. 1978. ..... **119.95**

[2] **8-Channel Dual-Stick Transmitter & 1 module.** 2-stick control of 4 channels, aux., plus landing gear switch & 2 additional channels.

Kit GDA-1205-D, Shpg. wt. 6 lbs. **139.95**

[3] **8-Channel Single-Stick Transmitter & 1 module.** Stick control of 3 channels, throttle with trim and aux., plus landing gear switch & 2 additional channels.

Kit GDA-1205-S, Shpg. wt. 6 lbs. **159.95**

GDA-1205 AND GDA-1919-1 SERIES SPECIFICATIONS: TRANS. — RF Frequency: crystal controlled, all bands. **Frequency stability:** within ±.005% on 27 MHz; within ±.002% on 53 MHz; 72 MHz. **Temp. Range:** 0 to 160°F. **RF Output Circuit:** pi network. **RF Input Power:** at least 500 mW. **Modulation:** on-off carrier keying. **Approx. Current Drain:** 100 mA on all bands. **Controls:** GDA-1205, 8 channels (4 with trim), on/off, trainer button; GDA-505, 5 channels (4 with trim), on/off switch, trainer button. **Power Supply:** Internal 9.6V 500 mAH Ni-Cad. battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120 volt power line. **Dimensions:** 7" H x 7" W x 2" D. **Net Weight:** 2½ lbs., with battery. **GDA-1205-2 SPECIFICATIONS: RECEIVER — Local Oscillator Operating Frequency:** crystal-controlled, all bands. **Temperature Range:** 0 to +160°F. **Sensitivity:** 5 μV or better. **Selectivity:** 6 dB down at ±4 kHz; 30 dB down at ±9 kHz. **Current Drain:** 10 mA. **Intermediate Frequency:** 453 kHz. **Power Supply:** 4.8 V battery pack (GDA-1205-3). **Controls:** On/off switch. **Dimensions:** 5⅛" H x 1¾" W x 1¾" D. **Net Weight:** 2 ozs.

[4] **3-Channel Pack-17™.** Has the convenience and versatility of plug-in frequency change and it's the ONLY 3-channel system we know of that INCLUDES rechargeable batteries and an external charger so you fly with full power and uncompromised performance. Has 2-axis stick assembly, easy to handle transmitter with convenient strap for one-hand operation. An optional conversion pack lets you go 4-channel by adding another channel to the stick. All three stick channels have trim control, the 4th channel is controlled by a thumb tab. Compatible with all Heathkit servos; ideal for use as trainer transmitter with GDA-1205 and GDA-505 systems. Specify frequency when ordering (see specs below).

Kit GDA-1405-1, 3-ch. transmitter with 1 Module. 5 lbs. **84.95**

Kit GDA-1405-3, 4-ch. conversion. 1 lb. **12.95**

GDA-1405-1 SPECIFICATIONS: TRANSMITTER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz bands. **Operating Temperature:** 0°-160°F. **Controls:** 3 channels (two with trim); ON-OFF switch. Optional fourth channel. **Power Supply:** Internal 9.6V, 500 mA hours, nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35-40 mA from external charger. **Frequencies Available:** 27 MHz (11 meters) — 26.995, 26.045, 27.095, 27.145 & 27.195. 53 MHz (6 meters) — 53.100, 53.200, 53.300, 53.400, 53.500. 72 MHz (4 meters) for R/C planes only — 72.080, 72.240, 72.400, 75.640. (All Models — 72.160, 72.320, 72.960.) **Dimensions:** 9½" H x 3 1/16" W x 2¼" D.

Additional Transmitter & Receiver Frequency Modules

When ordering specify frequency desired (see list below).

Transmit Module, Shpg. wt. 1 lb. **19.95**

Receive Module, Shpg. wt. 1 lb. **13.95**

FREQUENCIES AVAILABLE (MHz): 26.995, 27.045, 27.095, 27.145, 27.195, 53.1, 53.2, 53.3, 53.4, 53.5, 72.08, 72.24, 72.16, 72.32, 72.40 72.96, 75.640 MHz.
(When ordering, specify transmit or receive.)

SPECIAL 5-MODULE OFFER — SAVE $39.55!
5 Transmit and 5 Receive Modules of your choice — specify frequencies
Shpg. wt. 6 lbs. ..... **Only $129.95**

GET BIG SAVINGS on These Complete 3,5 and 8-Channel R/C Systems!



Complete 3-Channel Systems: Ideal for beginners, or as second systems for experienced flyers. Systems include 3-channel transmitter and one frequency module, receiver and one frequency module, receiver battery pack and batteries, and your choice of two servos. If purchased separately, $212.75.
GDS-1405-1, with miniature servos. 26 lbs. **179.95**
GDS-1405-2, with sub-miniature servos. 26 lbs. **179.95**

NEW 5-channel open-gimbal stick system: includes new open-gimbal stick transmitter and one plug-in frequency module, receiver and one plug-in frequency module, receiver battery pack, and four servos (choose miniature, subminiature or both). If purchased separately, up to $299.65.
GDS-1919, Shpg. wt. 13 lbs. **199.95**

8-Channel dual stick: Includes transmitter and two frequency modules, receiver and two frequency modules, receiver battery pack, and four servos (choose miniature, subminiature or both). If purchased separately, up to $353.55.
GDS-1205-D, Shpg. wt. 27 lbs. **284.95**

8-Channel single stick: Includes transmitter and two frequency modules, receiver and two frequency modules, receiver battery pack, and four servos (choose miniature, subminiature or both). If purchased separately, up to $373.55.
GDS-1205-S, Shpg. wt. 27 lbs. **284.95**

R/C Systems Including Cessna 172 Skyhawk Plane

The Cessna 172 Skyhawk is an ideal trainer plane for the beginning R/C'er or as an excellent fun-fly ship for those with experience. Build it in 5 to 10 hours and it includes all needed accessories, all you need is fuel.
RP-1172, Cessna 172 Skyhawk Flight Pack only, Shpg. wt. 8 lbs.. .....**74.95**

SAVE $114.70! NEW Five-Channel Open-Gimbal Stick System. Same as system GDS-1919 plus Cessna Skyhawk Flight Pack.
RPS-1919, Shpg. wt. 30 lbs. **259.90**

SAVE $93.60! 8-Channel Dual-Stick System. Same as system GDS-1205-D plus Cessna Skyhawk Flight Pack. **RPS-1205-D,** Shpg. wt. 32 lbs. **334.90**

SAVE $113.60! 8-Channel Single-Stick System. Same as system GDS-1205-S plus Cessna Skyhawk Flight Pack. **RPS-1205-S,** Shpg. wt. 32 lbs. **334.90**

SAVE $45.80! 3-Channel System. Same as system GDS-1405-1 plus Cessna Skyhawk Flight Pack. **RPS-1405-2,** Shpg. wt. 29 lbs. **239.90**

SAVE $49.80! Deluxe 3-Channel System. Same as system GDS-1405-1 plus Cessna Skyhawk Flight Pack and additional servo for complete 3-channel control.
RPS-1405-3, Shpg. wt. 29 lbs. **262.85**

When ordering, specify module frequencies and type(s) of servos. All systems include nickel-cadmium batteries.

High-quality Heathkit Servos, Receivers and Batteries

SERVO COMPARISON CHART	Min. 1205-4	Sub-Min. 1205-5	Hi-Torque 1205-8
Idle Current (max.)	15 mA	15 mA	20 mA
No Load Current	80 mA	80 mA	150 mA
Stall Current (nom.)	450 mA	450 mA	1000 mA
Thrust	4 lb.	4 lb.	6 lb.
Travel Time	0.5 sec	0.5 sec	0.4 sec
Rotary Travel	90°	90°	90° or 180°
Dimensions (HxWxL*)	1⅝x1¹⁵⁄₁₆x2³²⁄₃₂"	1¹¹⁄₁₆x¾x2³²⁄₃₂"	1⅝x1¹⁵⁄₁₆x2³²⁄₃₂"
Net Weight	1.75 oz.	1.25 oz.	1.75 oz.

All servos: Power Requirement: 4.8 VDC. **Position Accuracy:** 1%. **Mechanical Output:** 1 rotary arm, 1 rotary wheel. **Input Signal:** Pulse, 1-2 msec, 4V P-P. **Temperature Range:** 0° to 160° F. **Backlash:** <0.002". *H includes outputs, L includes mounting ears.
Kit GDA-1205-5, Sub-Min. Servo. Shpg. wt. 1 lb. **26.95**
Kit GDA-1205-4, Miniature Servo. Shpg. wt. 1 lb. **26.95**
Kit GDA-1205-8, Hi-Torque Servo. Shpg. wt. 1 lb. **26.95**
Kit GDA-1205-2, Receiver with 1 Frequency Module. 1 lb. **59.95**
Kit GDA-1205-3, Receiver Battery Pack. 1 lb. **11.95**
Trainer Link Accessory. Lets you hookup two 1205 transmitters for flight instruction.
GDA-1205-6, Shpg. wt. 1 lb. **10.95**

Heathkit Accessories make your hobby more fun!

Receiver Flight Pack Special! Ideal for outfitting second aircraft or updating your present plane. Includes receiver, battery pack, and your choice of four miniature or sub-miniature servos. Specify module frequency and type of servo. SAVE $24.75 over reg. sep. items prices.
Kit GDS-1205-F, Shpg. wt. 21 lbs. **154.95**

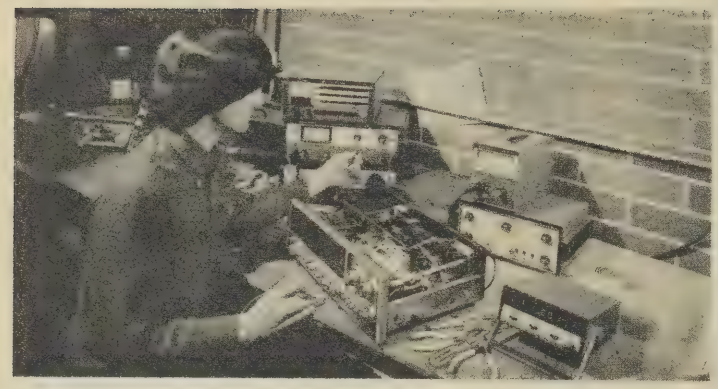


◀ **Thumb® Tach peaks performance.** Measures model engine rpm without physical connection to engine. 0-5000 and 0-25,000 rpm ranges. Ideal for needle valve adjustment, selection of glow plugs, gears and props. **Kit GD-69,** Shpg. wt. 1 lb. **27.95**

◀ **R/C Battery Monitor.** Expanded scale voltmeter checks capacity (under load) of batteries. Has meter, connector for all Heathkit battery packs, alligator clips for NiCads. Pocket case. **Kit GD-1188,** Shpg. wt. 1 lb. **14.95**

Radio Control Handbook. (Not shown.) Detailed information on use and maintenance of Heathkit R/C gear. **GDA-1205-7** **1.00**

See page 49 for book ordering information.



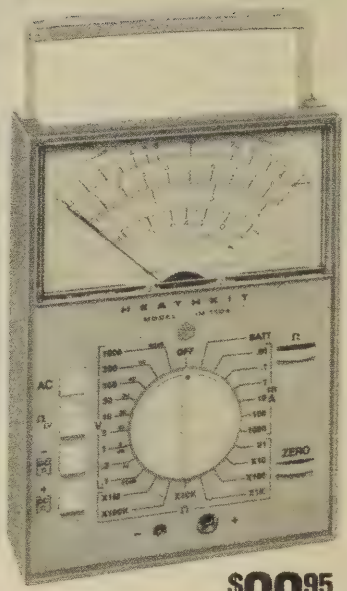
Heathkit Test Equipment... More Performance — More Reliability for your Instrument Dollar!

Ask any service professional and he'll tell you... good test gear costs money. And the cost to equip today's up-to-date service operation? It can be astronomical! That's why we think it makes more and more sense to turn to Heath. Heath makes the high performance instrumentation you need at prices you can really afford! Our prices are low and we've kept them that way — and with our special 5% discount offer, they're an even better buy! Yet at the same time we've maintained the high standards of quality you've come to depend on. Each kit you assemble represents thoughtful, proven design applications that are precision engineered to give you a test instrument that's both practical and precisely tailored to the critical needs of your electronics environment. That's why when it comes to reliability... and price... you won't find better!

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Simply buy one instrument from any three of the categories shown at right (three instruments minimum) and deduct 5% from the total price! If you're cutting a complete bench and need more than three instruments you can buy as many as you like — as long as three of your instruments are from three different categories — and you can still deduct 5% from the total price (excluding shipping and handling charges)! This discount even applies to any accessories — probes, connectors, cables, etc. — you want to buy. Sorry, this additional discount does not apply to the 5280 series instruments on page 53.



$99.95 Kit

new Taut-Band VOM with 10-megohm input and complete portability

- **Measures AC, DC volts, and current, ohms, dB**

The new IM-1104 is a taut-band VOM that combines accuracy, versatility and convenience at a low kit price. Features low-drift 1% precision metal film and wirewound resistors for exceptional stability. The 4½" taut-band meter is diode protected for outstanding ruggedness and reliability. Has 9 AC and DC voltage ranges from 0.01 V to 1000 V, 6 current ranges from 0.001 mA to 1000 mA, seven resistance ranges from 1 ohm to 1000 megohms, 9 dB ranges from −40 to +62. A built-in battery test shows condition of batteries with a flip of the range selector.

Kit IM-1104, Shpg. wt. 4 lbs. **99.95**

Assembled SM-666. Has 1 μA current range, less 100 mA and 1000 mA ranges. Shpg. wt. 3 lbs. **195.00**

IM-1104 SPECIFICATIONS: DC VOLTAGE RANGES: 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V. **Accuracy:** ±2% of full scale. **AC VOLTAGE RANGES:** 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V. **Accuracy:** ±3% full scale. **DC MILLIAMETER:** 0-0.01, 0.1, 1, 10, 100, 1000 mA. **Accuracy:** ±2% to 100 mA, ±3% to 1000 mA. **AC MILLIAMETER:** Same as DC mA; accuracy, ±3% to 100 mA; ±4% to 1000 mA. **OHMMETER:** Rx10, Rx100, Rx1000, Rx10K, Rx100K (10 ohm center scale). **dB:** (0 dB = 1 mW into 600 ohms) −40 to −18, −30 to −8, −20 to +2, −10 to +12, 0 to +22, +10 to +22, +20 to +42, +30 to +52 +40 to +62. **Operating Temperature:** 0 to 50° C. **Batteries** (not supplied): one 1.5 V D-cell (NEDA #13); four 1.5 V AA cells (NEDA #15). **Dimensions:** 6.95" H x 4.95" W x 2.25" D.

Component Testers	Generators	Meters	Oscilloscopes	Power Supplies
IT-3117	IG-5242	IM-102	IO-4510	IP-2710
IT-3118	IG-1271	IM-2202	IO-4541	IP-2711
IT-3120	IG-1272	IM-5218	IO-4550	IP-2715
IT-3121	IG-1273	IM-5225	IO-4555	IP-2717
IT-5230	IG-1275	IM-5228		IP-2718
	IG-4101	IM-5238		IP-5220
	IG-5218	IM-5248		
	IG-5228	IM-5258		
	IG-5237			
	IG-5240			
	IG-5257			

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Complete descriptions, specifications and prices for many high performance instruments: frequency counters, oscilloscopes, power supplies, function generators, TV and audio service equipment, multimeters, chart recorders, more. See how easy it is to get more instrument value per dollar!

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Low-priced Digital Multimeters and Logic Probe

High Performance Digital Multimeters for Every Budget and Application





Make Circuit Tests Fast and Easy

1 Our low cost, high performance IM-1210 Digital Multimeter

$67.95 Kit

- **Solid-state design uses IC circuitry for a clear non-blanking 2½-digit display**
- **Full-function capability includes AC voltage measurement up to 700 volts**

Here's a low-cost, high performance DMM for hams, hobbyists and service techs. Its full-function capability includes AC voltage measurements up to 700 volts. Has four overlapping AC & DC voltage & current ranges and five resistance ranges. Features overload protection on all ranges, 120 or 240 VAC operation, isolated floating ground, attractive heavy-duty case to withstand rugged use, universal banana jack inputs for easy testing of all types of electronic equipment. The IM-1210 is a very low-cost way to get all the accuracy and convenience of a true digital multimeter.

Kit IM-1210, Shpg. wt. 5 lbs. 67.95

Factory assembled and calibrated version of above.
SM-1210, Shpg. wt. 5 lbs. 110.00

IM-1210 SPECIFICATIONS: Functions: DC volts, DC current, AC volts, AC current, Ohms. **Ranges: (Full-Scale):** DC volts: 0-2, 20, 200, 1,000 V; DC current: 0-2, 20, 200, 2,000 mA; AC volts: 0-2, 20, 200, 700 V rms (50 Hz to 10 kHz). AC current: 0-2, 20, 200, 2,000 mA rms (60 Hz to 10 kHz). Ohms: 0-200, 2K, 20K, 200K, 2M ohms. **Overrange:** 25% on all functions, within maximum input limits. **Maximum Input:** 3 amperes into AC or DC mA, and Ohms (fuse protected). 700 VAC rms into Volts (except 2V range: 250 VAC rms). 1000 VDC into Volts (except 2V range: 350 VDC). "–" input may be floated 1000 VDC (700 VAC) above earth ground. **Resolution (Low Range):** Volts: 10 mV. Current: 10 μA. Ohms: 1 ohm. **Accuracy (Full Scale, ±1 Digit):** DC volts: ±1%. DC current: ±1.5%. AC volts: ±1.5%. AC current: ±2%. Ohms: ±1.5%. **Input Impedance:** 1 megohm on all voltage ranges. 2.1-volt drop maximum on current ranges (except 2.5-volt drop on 2,000 mA range). **Power Requirement:** 100-135 VAC, 200-270 VAC 50/60 Hz, 8 watts. **Dimensions (overall):** 3.00" H x 8.69" W x 10.54" D. **Weight:** 3.3 pounds (1.5 kg). **NOTE:** Specifications are based on 30-minute warmup.

2 Our Portable Digital Multimeter

$189.95

- **Automatic polarity indication**
- **Bright 3½ digit Beckman display**

Features 26 ranges — measures AC and DC volts, DC current and resistance. Has 100% overrange capability, separate voltage and current inputs, overload protection. Battery or portable operation.

Kit IM-2202, Shpg. wt. 8 lbs. 189.95

IM-2202 SPECIFICATIONS: DC VOLTAGE — Overload Capability: 300 V on 100 mV & 1V ranges; 1000 V on 10 V & 1000 ranges. **Accuracy:** Built-in references, ±0.5%, ±1 digit. Laboratory standards, ±0.2%, ±1 digit. **AC VOLTAGE — Overload Capability:** 250 V on 100 mV & 1 V ranges; 750 V on 10 V, 100 V & 750 V ranges. **Accuracy:** Built-in references...±1.0%, ±3 digits; 40 Hz to 1 kHz (except 40 Hz to 10 kHz on 100 m and ranges). Laboratory standards...±0.5%, ±3 digits; 40 Hz to 2 kHz on 750 range). **DC CURRENT — Range/Voltage Drop:** 100.0 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±0.5%, ±1 digit (except ±1%, ±1 digit on 1000 mA range). Laboratory standards...±0.2% ±1 digit (except ±0.5%, ±1 digit on 1000 mA range). **AC CURRENT — Range/Voltage Drop:** 100 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mV, 100.0 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±1.0%, ±3 digits (except ±1.5%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. Laboratory references...±0.5%, ±3 digits (except ±1.0%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. **RESISTANCE — Range/Test Current:** 100.0 Ω/1.0 mA, 1.000 kΩ/1.0 mA, 10.00 kΩ/0.1 mA, 100.0 kΩ/1.0 μA, 1000 kΩ/10. μA. **Accuracy:** Built-in references...±2%. ±1 digit. **GENERAL — Overrange Capability:** 100% on all ranges except 1000 VDC & 750 VAC. **Normal Mode Rejection:** 35 dB (line operation); extended on battery operation. **Common Mode Rejection:** 80 dB (line operation); extended on battery operation. **Power Line Isolation:** May be operated 1500 V above power line ground (during line operation). **Operating Temperature Range:** 10°C to 40°C. **Power Requirement:** 110 to 130 VAC, or 220 to 260 VAC (internal selectable); 60/50 Hz; 5 watts typical during charge. Size (overall including handle folded to rear): 3" H x 8¼" W x 8" D).

Low-Priced Logic Probe Equal to Units Costing Twice as Much and More!

$39.95 Kit

- **TWO indicator lights for clear readings**
- **Shows TRUE Logic Levels Even at High Frequencies**

The Heathkit IT-7410 detects and indicates both high and low logic levels in TTL or CMOS digital circuitry. It also indicates the polarity and presence of signal pulses as short as 10 nsec duration, and shows intermediate or "bad" logic levels.

Simply touch the probe tip to an IC pin to observe the following conditions. Both indicators off shows open circuit or abnormal level (between thresholds). The low (white) indicator on shows constant logic ZERO. The high (red) indicator on shows constant logic ONE. Both indicators flash at a 5 Hz or lower rate to show signal pulses. One indicator flashing shows normal to abnormal logic levels. A separate manually reset memory indicator is lit whenever any transition in logic levels occurs.

The probe is equipped with 34" power leads with strain relief and color-coded mini-clips; detachable high-frequency ground clip. The unit is powered by the circuit under test, or a separate regulated DC power supply.

Kit IT-7410, Shpg. wt. 1 lb. 39.95

Factory assembled and tested version of above.
ST-7410, Shpg. wt. 1 lb. 64.95

IT-7410 SPECIFICATIONS: DC Threshold Levels (switch-selected); TTL Logic ZERO (V), .8 ±.15 @ 5 VDC. TTL Logic ONE (V); 2.1 ±.25 @ 5 VDC. CMOS Logic ZERO (%), 30% ±10% of supply voltage. CMOS Logic ONE, 70% ±10% of supply voltage. **Input Impedance:** 400k ohms parallel with 10 pF. **Response Limits:** TTL or CMOS at 5 VDC: Single pulse or pulse train, 10 nS minimum. Squarewave, 100 MHz maximum. CMOS at 15 VDC; Single pulse or pulse train, 10 nS minimum; squarewave, 80 MHz maximum. **Memory Indicator (LED),** turns on with any change of either logic level indicator. Manually reset after turn-on. **Probe Input Protection:** ±50 VDC, continuous, ±175 VDC (124 VAC) 5 seconds. **Power Leads Protection:** −25 VDC, continuous. +25 VDC (17 VAC) 1 minute. **Power Requirements:** 4.75 to 5.5 VDC at 75 mA maximum (TTL), 4.75 to 15 VDC at 115 mA maximum (CMOS). **Operating Temperature Range:** 10° to 40°C (50° to 104°F). **Net Weight:** 8 oz. **Dimensions:** ¾" H x 1" W x 9¼" L.

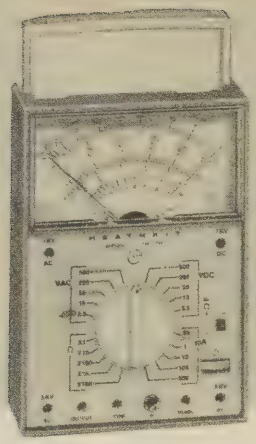
Heathkit Instrument Test Probes

IMA-100-10 Probe multiplies DC ranges of any 10-megohm meter by 100.
Kit IMA-100-10, Shpg. wt. 1 lb. 11.95

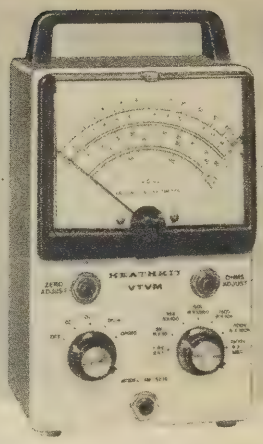
IMA-100-11 Probe provides X100 measurement for meters with 11-megohm input impedance. (Incl. probe resistance). Phone plug, ground clip.
Kit IMA-100-11, Shpg. wt. 1 lb. 11.95
Assembled SMA-100-11, Shpg. wt. 1 lb. 17.95

IMA-1000-1 Probe provides X1000 attenuation for meters with 1-megohm input impedance. Banana plug connector.
Kit IMA-1000-1, Shpg. wt. 1 lb. 11.95

High-performance Heathkit VOM's



1



2



3

1 General-purpose VOM for easy service

The IM-105 is a high-accuracy VOM that's really designed to take it — rugged enough for bench and field work — and accurate enough for engineering, design and R&D work. It's the one to have if you're a hobbyist experimenter or service tech! Just build up two modular circuit boards and you have it. This highly versatile IM-105 gives you a low-friction, taut-band meter with diode & fuse protected movement. Fuse in-line with the input connector is removable from front for extra convenience. Less batteries.

Kit IM-105, Shpg. wt. 3 lbs. **79.95**

Assembled SM-660, (less 5 KV ranges), Shpg. wt. 3 lbs. **94.00**

IM-105 SPECIFICATIONS: DC VOLTAGE RANGES: —0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. **Accuracy:** ±3% of full scale. **Input resistance:** 20,000 ohms/V full scale. **AC VOLTAGE RANGES:** —2.5, 10, 50, 250, 500 V, 1 kV & 5 kV full scale. **Accuracy:** ±4% of full scale. **Input resistance:** 5000 ohms/V. **Input capacity:** Less than 20 pF. **Frequency response:** 2.5, 10, and 50 V ranges. ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz. **DC CURRENT RANGES:** —0.05, 1.0, 10, 100, 500 mA & 10 A full scale. **Accuracy:** ±3% of full scale. **Voltage drop:** Approximately 0.25 V at full scale. **RESISTANCE RANGES:** —x1 (20 center scale), x10, x100, x1k, x10k. **Accuracy:** ±3 degrees of arc. **Source voltage:** x1 through x1k ranges: 1.5 V x 10k range. 15 V. **DECIBEL RANGES:** (0 dB=1 mW in 600 ohms). —10 to +56 dB. **Dimensions:** 7" H x 5" W x 2¼" D.

2 Popular, low cost VTVM

A single test probe that makes all measurements; seven practical AC, DC volts and ohms ranges; a precision 4½" color-coded 200 μA meter. 1% precision network resistors provide excellent accuracy; wide ±1 db, 25 Hz to 1 MHz frequency response permits a variety of AC measurements. Measures both rms and p-p AC volts. Separate full-scale ranges for 1.5 and 5 volts makes low-voltage readings really easy, ideal for work with solid-state and latest digital equipment. Can be wired for 120 or 240 VAC.

Kit IM-5218, Shpg. wt. 5 lbs. **44.95**

Assembled SM-5218, Shpg. wt. 5 lbs. **110.00**

IM/SM-5218 SPECIFICATIONS: Meter Scales: DC & AC (rms): 0-1.5, 15, 50, 150, 500, 1500 V full scale. **AC peak-to-peak:** 0.4, 14, 40, 140, 1400, 4000 V full scale. **Resistance:** 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures 1 ohm to 100 megohms. **Meter:** 4½", 200 μA movement. **Input resistance:** 11 megohms (1 megohm in probe) on all DC ranges; 1 megohm shunted by 35 pF on all AC ranges. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ±3%, AC ±5% of full scale. **Frequency response:** ±1 dB, 25 Hz to 1 MHz (600 ohm source). **Battery requirements:** 1.5 V, size "C" cell (not supplied). **Power Requirement:** 120/240 VAC, 50/60 Hz. **Dimensions:** 7⅜" H x 4 11/16" W x 4¼" D.

3 Pro-feature bench VTVM

The big 6" meter is really easy to read, separate 1.5 and 5 VAC scales make low voltage readings easy and accurate too. All calibration controls are conveniently adjustable from the front panel. Has the same outstanding features and performance specifications of the IM-5218. 120 or 240 VAC.

Kit IM-5228, Shpg. wt. 6 lbs. **54.95**

Assembled SM-5228, Shpg. wt. 7 lbs. **120.00**

IM/SM-5228 SPECIFICATIONS: DC VOLTMETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. **Input Resistance:** 11 megohm (1 megohm in probe) on all ranges: 1100 megohms with accessory probe. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** ±3% of full scale. **AC VOLTMETER — Ranges:** 0-1.5, 5, 15, 50, 150, 500, 1500 rms scales. **Frequency Response (5 V range):** ±1 dB 25 Hz to 1 MHz (800 ohm source, referred to 60 Hz). **Accuracy:** 5% of full scale. **Input Resistance & Capacitance:** 1 megohm shunted by 40 pF measured at input terminals (200 pF at probe tip). **OHMMETER — Ranges:** Scale with 10 ohm center, X1, X10, X100, X1000, X10k, X1 meg. Measures 0.1 ohm to 1000 megohms with internal battery. **Meter:** 6", 200 μA movement, polystyrene case. **Battery:** 1½V, "C" cell (not supplied). **Power requirement:** 120/240 VAC, 60/50 Hz, 10 W. **Dimensions:** 5" H x 12 11/16" W x 4¾" D.

PKW-4, Wired Replacement Probe for IM-5228, 5218, 18 or 28. Shpg. wt. 1 lb. **8.95**

Convert your IM-5228, 5218, 18 or 28 to instant-on solid-state operation with the IMA-18-1. Helps eliminate pointer-drift corrections. **IMA-18-1,** Shpg. wt. 1 lb. **19.95**



4

5

Save up to $45

4 Deluxe AC Voltmeter

Has excellent frequency response and sensitivity high-accuracy measurements. And it's one of the only instruments around to feature linear scales for both volts and decibels!

Kit IM-5238, Shpg. wt. 8 lbs. **89.95**

Assembled SM-5238, Shpg. wt. 8 lbs. **160.00**

IM/SM-5238 SPECIFICATIONS: Voltage Range (full scale): 1 millivolt to 300 volts AC, 12 ranges. **Decibel Range:** —70 dB to +40 dB, 12 ranges in 10 dB steps with variable offset. **Input:** 10 megohms, 30 pF, negative input grounded to chassis. **Frequency Response:** Voltage Range, 10 Hz to 1 MHz, ±2 dB. 10 Hz to 500 kHz ±1 dB, dB range, 10 Hz to 250 kHz ±1 dB. **Outputs:** DC (proportional to input volts), 1 volt full scale. DC (proportional to log of input volts), 3 volts full scale. AC (amplified output), 1 volt peak, full scale. **Scales:** 0-10 volts; 0-3.16 volts; —20 to +10 dB. **Accuracy:** Voltage Ranges, 4% of full scale at 1 kHz plus accuracy of calibration-standard. dB ranges, ±0.5 dB at 1 kHz plus accuracy of calibration standard. **Power Requirements:** 100-135 VAC, 200-270 VAC, 50/60 Hz, 20 watts.

5 Quality FET Multimeter

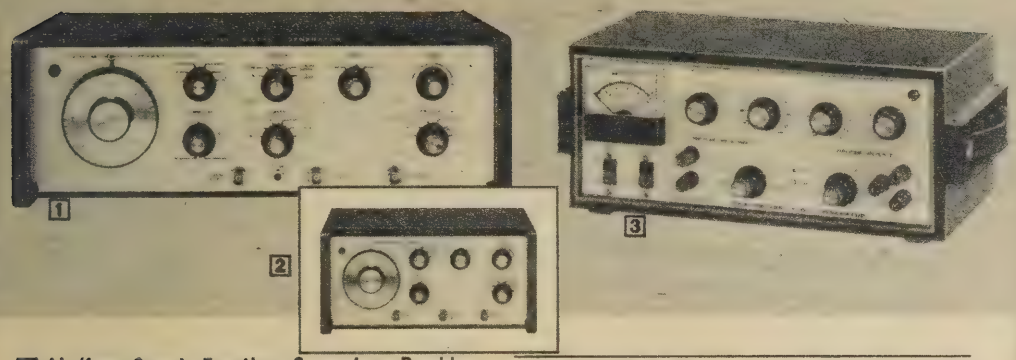
The IM-5225 is an FET multimeter capable of AC and DC voltage and current measurements in ranges from 0.1 to 1000 volts and 0.01 to 1000 mA. Seven ranges allow resistance measurements from 10 ohm to 10 megohm mid-scale. Features auto-polarity for added convenience, high and low voltage/ohms functions for in and out of circuit checks of semiconductor devices and resistance measurements.

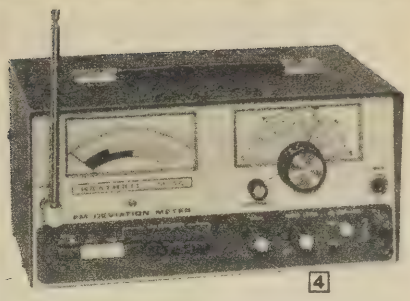
Kit IM-5225, Shpg. wt. 8 lbs.
Was $119.95 in Cat. No. 820 .....**Now 99.95**

Assembled SM-5225, 8 lbs. **Was $185.00 Now 140.00**

IM/SM-5225 SPECIFICATIONS: DC Volts: nine ranges 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, and 1000 full-scale. **AC Volts:** nine ranges 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, and 1000 volts full-scale. **DC Current:** six ranges 0-.01, 0.1, 1, 10, 100, 1000 milliamperes full-scale. **AC Current:** six ranges 0-.01, 0.1, 1, 10, 100, 1000 milliamperes full-scale. **Ohms:** seven ranges X1, X10, X100, X10k, X100k, X1M. **Power Requirements:** 120/240 VAC, 50/60 Hz, 5 watts. **Dimensions:** 5¾" W x 6⅞" H x 11¼" D. **Weight:** 5¾ lbs.

Top-Value Heathkit Test Instruments





new FM Deviation Meter

1 Lin/Log Swept Function Generator. Provides sine, square and triangle waveforms PLUS swept-function waveforms for convenient frequency response tests. Also has pen lift and chart control signals for use with Heath chart recorders and others. Six operational modes; Continuous output (CW); gated CW; a burst mode; linear and log sweeps over a 1000:1 sweep range. Start and stop frequencies are set independently; sweep modes can also be triggered externally. Has 50 dB switch attenuator variable between ranges; adjustable symmetry from 5% to 95%; analog, sweep and sweep gate outputs for convenient system control. See specifications below.

Kit IG-1275, Shpg. wt. 15 lbs. **319.95**
SG-1275, Assembled. 16 lbs. **Was 530.00 Now 430.00**

2 IG-1273 Function Generator. Same features and specifications of the IG-1275 above, but does not offer swept-function capability.

Kit IG-1273, 15 lbs. .....**Was 229.95 Now 189.95**
SG-1273, Assembled. 11 lbs. **Was 370.00 Now 240.00**

IG/SG-1275 SPECIFICATIONS: Output: 50-ohm source—short circuit protected. ±10 volts open circuit. ±5 volts into 50-ohm load. **Output Flatness:** ±0.1 dB to 300 kHz. ±0.5 dB to 3 MHz. **Frequency:** 0.003 Hz through 3 MHz in 6 range steps on primary decade. **Sine Distortion:** Less than 1%, $\times 10^1$. Less than 0.5%, $\times 10^2$, 10^3, 10^4. Less than 0.75%, $\times 10^5$. Harmonics 30 dB down $\times 10^6$. **Triangle Linearity:** No deviation greater than 1% to 300 kHz. **Square-Wave Rise and Fall:** Less than 60 nS. **Sweep Generator:** 6 ranges, 10 μs through 100 sec. **Sweep Output:** Supplies 0 to 4.5-volt linear ramp at sweep generator rate from a 1000-ohm source. **Sweep Gate Output Connector:** Supplies high TTL level for duration of sweep or burst. **Analog Output Connector:** Supplies 0 to 6 volts DC for 3 decade span. Less than 100-ohm source. **Sync Output Connector:** Supplies 1.5-volt (minimum) peak-to-peak signal from a 50-ohm source. **Voltage Control Input Connector (VCO):** 0 to ±5 volts signal for a 3-decade span. 8 kΩ input impedance. **External Trigger Input Connector:** ± (250 mV to 4 volts) with 10 kΩ. Triggers on positive slope. **Power Requirements:** 100 to 135 volts, 50-60 Hz, 20 watts maximum. (200 to 270 volts, 50-60 Hz, switch selectable.) **Dimensions:** 15″ wide, 11⅞″ deep, 5⅜″ high.

*Applicable only on top decade of each frequency range. The IG-1275 and IG-1273 require a triggered sweep oscilloscope for calibration.

3 Sine-square wave Audio Generator. Ideal for gain and frequency response measurements in audio amplifiers, as a signal source for harmonic distortion measurements or as an external modulator for RF signal generators. A meter, calibrated in both volts and dB, monitors the sine wave output.

Kit IG-5218, Shpg. wt. 10 lbs. **89.95**
SG-5218, Assembled and Tested. 10 lbs. **185.00**

IG/SG-5218 SPECIFICATIONS: Sine Wave Output: Output voltage: 8 ranges, 0.003 to 10 V rms (full-scale) with 10 k ohm or higher external load. 6 ranges, 0.003 to 1 V (full-scale) with 600 ohm internal or external load. **dB ranges:** −62 dB to +22 dB, −12 dB to +20 dB on amplitude switch in 10 dB steps. +2 dB max. into 600 ohm load. (0 dB = 1 mW in 600 ohm). **Output variation:** +1 dB 10 Hz to 100 Hz. **Output impedance:** 10 V range: 0-1000 ohm, 3 V range: 800-1000 ohm; 1 V range and lower; 600 ohm. **Meter accuracy:** ±10% of full scale. **Square Wave Output:** Output voltage (peak-to-peak). 0.1; 1, 10 V into 2000 ohm load or higher. **Output impedance:** 0.1 and 1 V ranges: 52 ohm; 10 range: up to 220 ohm. **Power requirement:** 105-126 or 210-250 VAC, 60/50 Hz, 6 watts.

4 NEW! FM Deviation Meter. Measures peak deviation (frequency modulation) of transmitters and signal generators with carrier frequencies between 25 and 1000 MHz. Has easy-to-read meter, switches for range selection, audio de-emphasis, internal battery condition; IF and audio level controls; fine-tune control. Battery-operated (batteries not included). You can also connect it to a transmission line.

Kit IM-4180, Shpg. wt. 6 lbs. **149.95**
SM-4180, Assembled and Tested. 6 lbs. **250.00**
Battery Eliminator/Charger for IM-4180.
Kit IMA-4180-1, Shpg. wt. 2 lbs. **29.95**
SMA-4180-1, Assembled and Tested. 2 lbs. ...**40.00**

IM/SM-4180 SPECIFICATIONS: Deviation Ranges: 0-2, 0-7.5, 0-20 and 0-75 kHz peak. **Accuracy:** ±3% of full scale. **Input Impedance:** 50 ohms. **Maximum Safe Input:** 5 volts. **Scope Output:** 13 mV/kHz peak. **Power Supply:** Ten AA cells (not supplied). NEDA Type 15, zinc-carbon, alkaline or nickel-cadmium. **Dimensions:** 10¾″ W x 5″ H x 7⅜″ D.

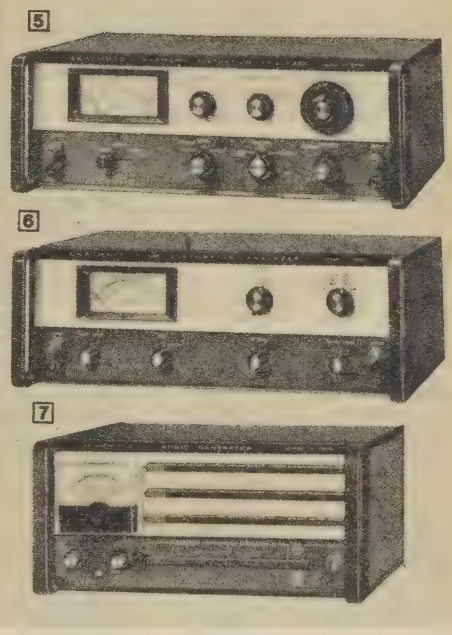
5 Harmonic Distortion Analyzer. The Heathkit IM-5258 is a professional-grade total harmonic distortion (THD) analyzer. Its outstanding sensitivity and bandwidth permit measurement of THD levels as low as 0.03%, over a frequency range of 5 Hz to 100 kHz. (Not for use in strong RF fields.)

Kit IM-5258, Shpg. wt. 17 lbs. **229.95**
SM-5258, Assembled. 16 lbs. **Was 430.00 Now 330.00**

IM/SM-5258 SPECIFICATIONS: Frequency Range: 5 Hz to 100 kHz in 5 ranges. **Distortion Range:** reads from 0.3% to 100% full scale in 6 ranges. **Residual Distortion:** 0.03% or less. **Input Impedance:** 1 megohm/70 pF maximum. **Required Input Level:** 316 mV for distortion measurements. **Voltmeter:** 1 mV to 300 V in 12 ranges. **Accuracy:** 5% of full scale. **Output:** 100 mV for full scale meter deflection. **Power Requirement:** 100-135 VAC or 200-270 VAC, 60/50 Hz. 12 watts. **Dimensions:** 5⅜″ H x 15″ W x 11½″ D.

6 Intermodulation Distortion Analyzer. This intermodulation distortion analyzer is designed for professional-quality audio servicing and testing.

Kit IM-5248, 14 lbs. .....**Was 139.95 Now 119.95**
SM-5248, Assembled. 15 lbs. **Was 340.00 Now 190.00**



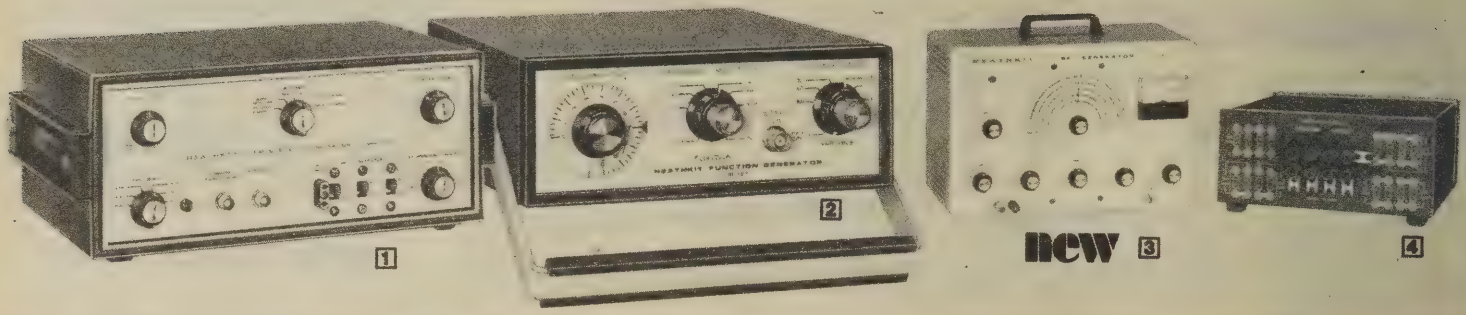
IM/SM-5248 SPECIFICATIONS: IM METER: Ranges: 0.1 to 100%, readable to 0.01% plus residual. **Residual:** Less than 0.01% with internal generators. **Accuracy:** 5% full scale. **Input Impedance:** 1 megohm. **HF Sensitivity:** 100 mV minimum. **Oscillator Frequencies:** 60 Hz (line syncable), and 7000 Hz. **Connectors:** 5-way binding posts. **AC VOLTMETER:** 10 mV to 300 volts. **Input Impedance:** 1 megohm. **Accuracy:** 5% full scale. **Frequency Response:** 5 Hz to 1 MHz, 3 dB. **Power Requirement:** 100-135 VAC or 200-270 VAC switch selected, 60/50 Hz. 15 watts. **Dimensions:** 5⅜″ H x 15″ W x 11½″ D.

7 IG-1272 Audio Frequency Generator. The Heathkit IG-1272 provides a low-distortion sine wave output over a frequency range from less than 5 Hz to 100 kHz.

Kit IG-1272, Shpg. wt. 11 lbs. **129.95**
SG-1272, Assembled. 10 lbs. **Was 230.00 Now 170.00**

IG/SG-1272 SPECIFICATIONS: Output Voltage: 0.003 to 10 volts RMS. **Output Load:** 600 ohms. **Hum and Noise:** 0.01% or less. **Frequency Range:** 5 Hz to 100 kHz. **Output Flatness (referenced to meter) Pushbutton Mode:** Within ±1.1 dB from 5 to 20 Hz; within ±0.2 dB from 20 Hz to 100 kHz. **Output Flatness (referenced to meter) Variable Mode:** Within ±2.5 dB from 10 Hz to 100 kHz. **Frequency Accuracy:** Pushbuttons; ±4%, ±1 Hz, typical ±1.5%. Variable; Depends on accuracy of counter being used. **Attenuation:** 10 to 70 dB. **Power Requirement:** 120 VAC or 240 VAC, 50 or 60 Hz. 10 watts maximum. **Dimensions:** 5½″ H x 11″ W x 12⅓″ D. **Weight:** 9.5 lbs.

Instruments to make your servicing easier and faster



1 FM Stereo Generator. Provides audio or composite stereo signal for multiplex adapter adjustments...RF carrier modulated by these signals for tuner & receiver adjustments...phase test function for subcarrier transformer adjustment...a variable level crystal-controlled 19 kHz pilot signal for checking receiver lock-in ranges...plus built-in sweep and marker signals for RF & IF alignment. Also has switch selection of 400 Hz, 1 kHz, 5 kHz, 19 kHz, 38 kHz and one of two SCA frequencies. With test leads.

Kit IG-5237, Shpg. wt. 11 lbs. **99.95**

IG-5237 SPECIFICATIONS: RF Signal frequency: 100 MHz adjustable by approx. ±2 MHz. **Pilot modulating frequency:** 10 kHz ±2 Hz. **FM modulation:** Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase). Monophonic FM. **Deviation:** Adjustable to 75 kHz. **Sweep rate:** (used for RF and IF alignment) 60 Hz. **Power requirement:** 120/240 VAC, 50/60 Hz, 35 W. **Dimensions:** 5½" H x 13½" W x 9" D.

2 Function Generator. Generates highly accurate sine, square or triangle waveforms. The six-position frequency multiplier and large front panel tuning control set any frequency fast and easy. The short-circuit proof output amplifier supplies a 10 Volt (p-p) signal into a 50-ohm load. A calibrated step attenuator adjusts from 0 to 50 dB (10P p-p to 30 p-p) in 10 dB steps. An attenuator control provides up to 20 dB additional attenuation for each step for a total of 70 dB. A triggered oscilloscope is needed for calibration.

Kit IG-1271, Shpg. wt. 7 lbs. **109.95**

Assembled SG-1271, wired version of the IG-1271 in same attractive blue & white styling (not shown), Shpg. wt. 7 lbs. **185.00**

IG-1271 SPECIFICATIONS: Frequency accuracy: ±3% of full scale on dial. **Functions: Triangle waveform:** Nonlinearity, 5% maximum. Symmetry within 10% of 50% duty cycle. **Square waveform:** 100 nanosecond maximum rise or fall time. **Sine waveform:** Harmonic distortion: 3% max., 5 Hz to 100 kHz. **Power requirement:** 105-130 volts or 210-260 volts. rms, 60/50 Hz. 15 watts max. **Dimensions:** 3" H x 7¼" W x 8⅞" D (with handle removed). **Net weight:** 4.2 lbs.

3 NEW! Precision RF Generator. The IG-5242 provides 100 kHz to 30 MHz signals with ±3% adjustable frequency calibration. RF output voltage adjusts from 5 to 100,000 μV in five attenuated steps, with 10:1 variable attenuation. For 120/240 VAC, 60/50 Hz. 8½" H x 13" W x 7" D.

Kit IG-5242, Shpg. wt. 14 lbs. **119.95**

4 Heathkit Audio Load. The ID-5252 is a must for audio service technicians, manufacturers, and the serious audiophile alike. It provides the correct loading required for audio amplifiers under test in accordance with manufacturers published specifications and the Institute of High Fidelity Manufacturers (IHFM). Eliminates "special order" load resistors for each amplifier you want to test. Provides audio loads of 2, 4, 8, 16 or 32 ohms depending on the connections made at the five-way binding posts. Jacks are provided for connecting a voltmeter, oscilloscope or other test instrument at the load in use. Includes test leads.

Kit ID-5252, Shpg. wt. 6 lbs. **37.95**

ID-5252, SPECIFICATIONS: Available loads (all resistors 1% tolerance): four 8-ohm, 60 W; two 16-ohm, 120 W; one 32-ohm, 240 W; one 2-ohm, 240 W; one 8-ohm, 240 W. **Reactance:** Less than 10% at 100 kHz. **Leads:** four 3-ft. #12 gauge leads, spade lugs, four jumper links. **Dimensions:** 4" H x 9" W x 9" D.

5 NEW! Decade Capacitance Kit. Designed for laboratory uses where a wide-range variable capacitor is necessary. Ideal as a substitute for tuned circuit elements, bridge impedances and filter elements. Also helps you determine unknown capacitance values in a circuit without involved calculations. The IN-3127 is recommended for use with the IN-3117 Decade Resistance Kit (page 47) to solve resistance and capacitance circuits where a large range of values is needed.

Kit IN-3127, Shpg. wt. 3 lbs. **26.95**

IN-3127 SPECIFICATIONS: Range: 100 pF to 0.111 μF in 100 pF increments. **Voltage Rating:** 400 volts DC. **Dielectric:** 100 pF to 1000 pF, mica; 1000 pF to 10,000 pF, polystyrene; 0.01 μF to 0.1 μF, mylar. **Accuracy:** 100 pF to 1000 pF, 1%; 1000 pF to 10,000 pF, 1%; 0.01 μF to 0.1 μF, 5%. **Stray Capacitance:** 10 to 15 pF at terminals. **Dimensions:** 7⅛" W x 4" H x 5" D.

6 Resistor Substitution Box. Gives you a rapid and flexible means of determining resistance values required in new electronic circuit design. Also lets you substitute resistance values directly in existing circuits during operation to determine the resistance value that will provide maximum circuit performance. Provides switch selection of any one of 36 EIA standard 10% 1-watt resistors from 15 ohms to 10 meg.

The "shorting type" switches with make-before-break action permit smooth selection of the resistance values without opening or shorting the circuit. All values are EIA standards. 5⅜" H x 3⅛" W x 3" D.

Kit IN-3137, Shpg. wt. 2 lbs. **13.95**

7 Capacitor Substitution Box. Helps you determine proper capacitance values without time-consuming calculations. Provides switch selection of any of 18 EIA standard capacitors from 100 pF to 0.22 μF.

The special rotary switch incorporates make-before-break contacts that provide smooth changes in capacitance without "opening" or "shorting" the circuit under test. All capacitors are rated at 600 V except 3 lowest and 2 highest values are 500 & 400 V respectively. Accuracy is ±5% for values from 0.0001-μfd through .00047 μfd; and ±10% for 0.01 through .22 μfd. 3" H x 3" W x 6" D.

Kit IN-3147, Shpg. wt. 2 lbs. **13.95**



For Fastest Service
Use The Heathkit "Hot Line"
(616) 982-3411
Anytime day or night

High-Performance Heathkit Test Equipment



1 Rugged Bi-Directional Wattmeter. The IM-4190 is a professional quality bi-directional wattmeter designed to inexpensively meet the needs of the RF Communications Technician. Covering the 100 MHz to 1 GHz spectrum, without costly "slugs" or elements, it's ideal for use in Two-way service/repair or for operation and maintenance of VHF and UHF communications equipment. It may be used in applications to 300 watts. Power is measured on three forward scales (30, 75, and 300 watts) and three reflected scales (3, 7.5, and 30 watts). The 4190 is capable of withstanding full power overloads on both of its lower scales without causing damage to the meter movement! The wattmeter is equipped with N-type coax connectors to insure low high-frequency insertion loss, features extremely rugged construction, and because of its size and metal D-ring for belt attachment, is ideal for tower antenna tuning and alignment procedures. Comes with N to PL-259 adaptors. Requires 9-volt battery (not supplied).

Kit IM-4190, Shpg. wt. 3 lbs. **109.95**

SAVE $45.00! Factory Assembled and Tested.
SM-4190, 3 lbs. .....**Was $185.00 Now 140.00**

IM/SM-4190 SPECIFICATIONS: Power Ranges: Forward: 30, 75, and 300 watts, full scale. **Reflected:** 3, 7.5, and 30 watts, full scale. **Frequency Range:** 100 MHz to 1 GHz. **Impedance:** 50 ohms. **Accuracy:** ±5% of full scale (30, 75 and 300 watt ranges), ±7.5% of full scale (3, 7.5, and 30 watt ranges). **Size:** 4.5" H x 4.25" W x 4.625" D. **Power Requirement:** 9-volt battery, NEDA 1604.

2 FET/Transistor Tester. For quick, accurate tests of transistors, diodes, FETs, SCRs, triacs and unijunction transistors. Tests in-circuit using color-coded test leads supplied or out-of-circuit using built-in sockets. Shows gain (DC Beta), trans-conductance (Gm) and leakage directly.

Kit IT-3120, Shpg. wt. 5 lbs. **59.95**

IT-3120 SPECIFICATIONS: Out-of-Circuit Accuracy: ±5% for DC beta and leakage. **In-Circuit Accuracy:** Indicates good or bad transistor, FET, diode, SCR or triac. **Diode Test:** Tests for forward conduction and blocking. **Unijunction Transistor Test:** Measures Ieb_2s, Ib_2b_1s and emitter current. **Power Requirements:** Two 1½ V cells (not supplied). **Dimensions:** 5" H x 9⁷⁄₁₆" W x 8⅛" D.

3 Deluxe Digital IC Tester. Lets you determine functions of IC's, check operation against your own data sheets. Features a special high-quality "zero-force" insertion socket — the same as used in expensive production-line testers — that lets you make thousands of insertions and extractions without worrying about bent pins. Exclusive "bounce-free," mercury stepping switch allows safe and easy "exercising" of multi-function IC's such as flip-flops. Has input-output jacks for each pin; neon indicators. Exceptionally easy to operate — 14- or 16-pin IC's can be installed in any position. Ideal for use with the Digital Techniques Program (page 87).

Kit IT-7400, Shpg. wt. 6 lbs. **74.95**

IT-7400 SPECIFICATIONS: Pull-up Resistors: externally connected, with patch terminals. **Patch Terminals:** one at each pin. **Selector Switches:** two at each terminal, one for +5V, step, or off; the other for gas discharge or ground. **Gas Discharge:** allows direct driving of neon indicator lamp for high voltage decoder driver. **Power Supply:** 5 VDC regulated, ±5%, 300 mA and 3.6 VDC, switch selected. **Power Requirement:** 100-135/200-270 VAC, 60/50 Hz. **Dimensions:** 4⅝" H x 11⅜" W x 9¼" D.

4 Transistor/Diode Checker. Check high and low power transistors (NPN & PNP) for shorts, leakage, opens and current gain, diodes for forward and reverse current, continuity. Uses two 1.5 V "C" cells, not supplied. 3⅛" H x 3⅛" W x 3¾" D.

Kit IT-3127, Shpg. wt. 2 lbs. **12.95**

5 Deluxe Transistor Tester. For reliable in- or out-of-circuit tests. Reads DC Beta (gain) on two ranges, 2-100 and 20-1000. Measures out-of-circuit leakage, identifies NPN or PNP's. Low power — will not damage transistor or diode incorrectly connected. Not for high power or switching transistors.

Kit IT-3118, Shpg. wt. 4 lbs. **34.95**

6 High-accuracy Impedance Bridge. Has four separate bridge circuits for accurate measurement of resistance, capacitance, and low & high inductance, dissipation factor of capacitors and storage factor of inductors. Has direct reading 100-0-100 microammeter, front panel binding posts for easy test setups. Requires headphones or scope for alignment.

Kit IB-3128, Shpg. wt. 11 lbs. **139.95**

IB-3128 SPECIFICATIONS: DC Measurements: Built-in power supply. Binding posts for external supply. **Meter:** 100-0-100 microampere meter. **AC Measurements:** Built-in 1000 Hz generator. Terminals for external generator. **Detector:** Vacuum tube detector and amplifier, using built-in meter. Terminals for external detector. **Resistance:** 0.1 ohm to 10 megohm. **Capacitance:** 100 pF to 100 μF. **Inductance:** 0.1 mH to 100 H. **Dissipation Factor:** (D) 0.002 to 1. **Storage Factor:** (Q) 0.1 to 1000. **Accuracy:** ½% decade resistors used. **Power Supply:** Transformer and silicon rectifier. **Power Requirements:** 105-125 V. or 210-250 V., 60/50 Hz, 10 watts. **Dimensions:** 8" H x 17" W x 6" D.

7 Lab-type Decade Resistance Box. Use in conjunction with the IN-3147 (page 46) for solving complex resistance and capacitance networks where large ranges of values are necessary. Covers 1 ohm to 999,999 ohms in 1-ohm steps. Resistors are 1-watt, 0.5% tolerance. With binding posts.

Kit IN-3117, Shpg. wt. 3 lbs. **44.95**

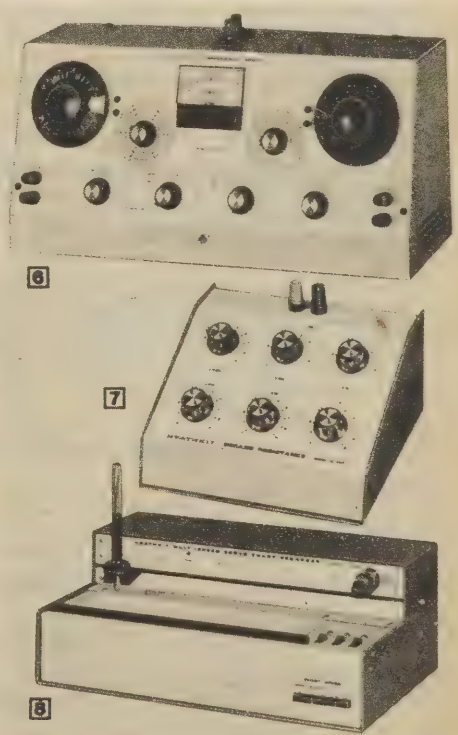
IN-3117 SPECIFICATIONS: Range: 1 ohm to 999,999 ohms in 1-ohm steps. **Resistors:** precision, 0.5% accuracy, rating 1 watt. **Minimum DC resistance:** 0.025 ohm at terminals with all switches set at zero. **Maximum current for each range:** X1, 1000 ma. X10, 300 ma. X100, 100 ma. X1K, 30 ma. X10K, 10 ma. X100K, 3 ma. **Dimensions:** 5" H x 7½" W x 6⅝" D.

8 Low-cost Strip Chart Recorder. Has 1 mV or 10 mV full-scale input (selected during assembly; twelve chart speeds from 5 sec./in. to 200 min./in. Power, servo and chart switches, coarse and fine zero controls, high impedance, floating input. Zener regulated voltage supply. Less than 1% error, full scale. For 120/240 VAC, 60/50 Hz. 6" H x 15" W x 9⅛" D.

Kit IR-18M, Shpg. wt. 15 lbs. **199.95**

3 rolls chart paper (140 ft./roll).
IRA-18-1, Shpg. wt. 5 lbs. **10.95**

120 ft. roll chart paper. (For slow speeds.)
SU-445-17, 2 lbs. **4.75**



Here's how to place your order

HOW TO ORDER KIT MANUALS

See how easy kitbuilding really is — choose the product you want, then order the manual first. **Be sure to send manual orders on a separate sheet of paper.** Manuals are $3 each except for the following: color TV's, organs, H9, H10, SB-104A, HW-101, AN-2016A, AR-1515, AA-1640, AJ-1510A, AR-1500A, and ET series, which are $7 each. Individual H8 and H11 manual sets, which include books for assembly, operation software, all memory boards and interfaces, are $15 each set. Add 50¢ postage and handling for each manual ordered. Simply write Heath Company, Manual Dept., Benton Harbor, MI 49022.

MONEY-BACK MANUAL OFFER. We'll deduct the price of the manual when you buy the kit. Simply include manual invoice with your order.

TERMS

- **Heath Revolving Charge Plan.** No money down. Up to two years to pay. Two convenient monthy payment plans available. Down payments are encouraged to reduce your monthly payments and finance charges. Follow instructions on the reverse side of order blank. Be sure to sign charge agreement.
- **Commercial Accounts.** Net 30-day terms available to well-rated companies.
- **Educational Accounts:** Net 30-day terms available to Patterson listed educational institutions. Authorized purchase order is required.
- **Note:** All credit orders subject to Heath Credit approval.

SPECIAL SHIPPING INFORMATION

- **NON-MAILABLE ITEMS** — Items indicated Motor Freight exceed weight or size limitations. Examples are TV's, organs, some speaker systems, garage door mechanisms, etc. These are shipped with freight charges collect. Check with your local carrier for charges before ordering.
- **APO/FPO SHIPMENTS** — Use the following Zones to estimate costs — West Coast, Zone 8; East Coast, Zone 5; Miami, Zone 6. PAL (Airlift Military) carries packages by air transport for a fee of $1 per package plus postage. Parcel must weigh less than 30 lbs. and not exceed 60" in length and girth.
- **SAM:** Parcel must weigh less than 15 lbs. and not exceed 60 in. length and girth. Be sure to check with your local postmaster for exceptions to certain APO or FPO numbers.

SPECIAL INFORMATION ON QUANTITY ORDERS

- **Commercial, Educational, and Industrial Sales:** For quotations on 10 or more of any Heath product, kit or wired, write or phone Marketing Services Department, **616-982-3454.**
- **Contract Sales:** For orders of 250 or more of any Heath product, kit or wired, write or phone Contract Sales Department, **616-982-3519.** Private labeling, custom packaging, or design modifications can be made to meet your specific needs.
- **Special Educational Product Discount:** A 15% discount is provided on any order for 10 or more of Heath EE model series (10% on ET model series) educational products. For quantities of 100 or more, including special versions of these educational products to fit a particular teaching situation, contact Contract Sales Department.

Note: Quantity discounts apply to single models only — not combination orders, special offers, or systems.

HEATH PHONE DIRECTORY FOR ASSISTANCE AND INFORMATION

Replacement Parts Orders:

Please have Heath part no. available when you call **616-982-3571**

International Sales **616-982-3512**

General Office (non-order calls) **616-982-3200**

Computer Sales and Information **616-982-3285**

TECHNICAL ASSISTANCE

- R/C, Audio, Electronic Organs .. **616-982-3310**
- Amateur Radio **616-982-3296**
- Test Equipment, Weather Instruments, Home Clocks **616-982-3315**
- Television **616-982-3307**
- Aircraft, Appliances, Automative, Marine, Scanners' Security, General Products **616-982-3496**
- Computers **616-982-3309**

8:00 A.M. to 12:00 P.M. and 1:00 P.M. to 4:30 P.M., EST, Weekdays only

BY PHONE: Use the Heathkit "Hotline" — **(616) 982-3411** anytime, day or night, 7 days a week. It's fast, convenient and your order will be shipped to you promptly.



BY MAIL: Use the order form on the facing page. Fill out your order completely with model no., description and price exactly as shown in the catalog. Give your address with full details including Zip and phone number. **Enter shipping charges for each item individually in the column provided.**



ZONE CHART: Your zone is indicated by the first three numbers of your Zip Code.

Zip Code Prefixes	Zone
006-009	8
010-069	5
070-089	4
090-099	5
100-108	5
109	4
110-119	5
120-123	4
124-126	5
127-128	4
129	5
130-152	4
153	3
154-160	4
161	3
162-163	4
164-165	3
166-199	4
200-232	4
233-237	5
238-259	4
260-261	3
262-278	4
279	5
280-283	4
284-285	5
286-293	4
294-295	5
296-297	4
298-299	5
300-303	4
304	5
305-307	4
308-329	5
330-334	6
335-338	5
339	6
340	6
350-352	4
354	5
355-359	4
360-361	5
362	4
363-369	5
370-386	4
387	5
388	4
389-397	5
400-406	3
407-409	4
410-412	3
413-422	4
423	3
424-426	4
427-432	3
433-436	2
437-457	3
458	2
460-462	3
463-464	2
465-466	1
467-469	2
470-472	3
473	2
474-475	3
476-477	4
478	3
479-489	2
490-491	1
492	2
493-495	1
496-499	3
500-516	4
520-524	3
525	4
526-528	3
530-534	2
535-539	3
540	4
541-546	3
547-548	4
549	3
550-566	4
567	5
570-572	4
573-588	5
590-597	6
598-599	7
600-609	2
610-619	3
620-623	4
624-628	3
629-668	4
669-679	5
680-687	4
688-693	5
700-722	5
723-727	4
728-768	5
769	6
770-778	5
779-789	6
790-792	5
793-799	6
800-803	5
804-805	6
806-807	6
808-816	6
820-822	5
823-826	6
827	5
828-832	6
833	7
834	6
835-838	7
840-847	6
850-864	7
865-884	6
890-898	7
900-921	8
922-928	7
930-934	8
935	7
936-960	8
961	7
962-976	8
977-979	7
980-987	8
988-994	7
995-999	8

RATE CHART

Heath Shipping and Handling Charges (Mailable items only)

Your shipping and handling charges are indicated in the zone column across from the shipping weight.

Note: Blue Label Service Area Zone A covers: CT, ME, MA, NH, NJ, RI and VT. Zone B covers: AZ, CA, FL, ID, MT, NV, NM, OR, WA, WY, UT.

Shpg. Wt.	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	BLUE LABEL AIR SERVICE CHARGE Zone A	Zone B
1	$1.20	$1.27	$1.39	$1.58	$1.64	$1.72	$1.81	$1.24	$1.28
2	1.35	1.39	1.56	1.72	1.84	1.98	2.22	1.72	1.81
3	1.45	1.53	1.73	1.86	2.04	2.24	2.61	2.21	2.34
4	1.56	1.65	1.82	2.00	2.23	2.50	3.00	2.69	2.87
5	1.66	1.77	1.92	2.14	2.43	2.77	3.39	3.18	3.39
6	1.71	1.84	2.01	2.28	2.62	3.03	3.78	3.66	3.92
7	1.76	1.90	2.11	2.41	2.82	3.29	4.17	4.15	4.45
8	1.80	1.97	2.20	2.55	3.02	3.56	4.56	4.63	4.98
9	1.85	2.03	2.29	2.69	3.21	3.82	4.95	5.12	5.51
10	1.89	2.10	2.39	2.83	3.41	4.08	5.34	5.60	6.03
11	1.94	2.17	2.50	3.00	3.65	4.42	5.73	6.09	6.56
12	1.98	2.22	2.56	3.09	3.77	4.57	6.12	6.57	7.09
13	2.02	2.27	2.63	3.17	3.89	4.72	6.41	7.06	7.62
14	2.05	2.32	2.69	3.25	3.99	4.86	6.62	7.54	8.15
15	2.09	2.36	2.74	3.33	4.09	4.99	6.80	8.03	8.67
16	2.13	2.41	2.80	3.40	4.19	5.11	6.98	8.51	9.20
17	2.16	2.45	2.85	3.47	4.28	5.23	7.15	9.00	9.73
18	2.20	2.49	2.92	3.54	4.37	5.34	7.31	9.48	10.26
19	2.23	2.53	3.04	3.63	4.49	5.45	7.47	9.97	10.79
20	2.27	2.58	3.16	3.78	4.68	5.60	7.62	10.45	11.31
21	2.30	2.68	3.29	3.94	4.88	5.85	7.76	10.94	11.84
22	2.37	2.77	3.41	4.09	5.08	6.09	7.90	11.42	12.37
23	2.45	2.86	3.53	4.24	5.28	6.33	8.03	11.91	12.90
24	2.52	2.95	3.65	4.39	5.47	6.58	8.16	12.39	13.43
25	2.59	3.04	3.77	4.54	5.67	6.82	8.28	12.88	13.95
26	2.67	3.14	3.89	4.70	5.87	7.06	8.49	13.36	14.48
27	2.74	3.23	4.01	4.85	6.06	7.31	8.79	13.85	15.01
28	2.82	3.32	4.13	5.00	6.26	7.55	9.09	14.33	15.54
29	2.89	3.41	4.25	5.15	6.46	7.79	9.39	14.82	16.07
30	2.96	3.50	4.37	5.30	6.65	8.03	9.68	15.30	16.59
31	3.04	3.60	4.50	5.46	6.85	8.28	9.98	15.79	17.12
32	3.11	3.69	4.62	5.61	7.05	8.52	10.28	16.27	17.65
33	3.19	3.78	4.74	5.76	7.25	8.76	10.58	16.76	18.18
34	3.26	3.87	4.86	5.91	7.44	9.01	10.88	17.24	18.71
35	3.33	3.96	4.98	6.06	7.64	9.25	11.17	17.73	19.23
36	3.41	4.06	5.10	6.22	7.84	9.49	11.47	18.21	19.76
37	3.48	4.15	5.22	6.37	8.03	9.74	11.77	18.70	20.29
38	3.56	4.24	5.34	6.52	8.23	9.98	12.07	19.18	20.82
39	3.63	4.33	5.46	6.67	8.43	10.22	12.37	19.67	21.35
40	3.70	4.42	5.58	6.82	8.62	10.46	12.66	20.15	21.87
41	3.78	4.52	5.71	6.98	8.82	10.71	12.96	20.64	22.40
42	3.85	4.61	5.83	7.13	9.02	10.95	13.26	21.12	22.93
43	3.93	4.70	5.95	7.28	9.22	11.19	13.56	21.61	23.46
44	4.00	4.79	6.07	7.43	9.41	11.44	13.86	22.09	23.99
45	4.07	4.88	6.19	7.58	9.61	11.68	14.15	22.58	24.51
46	4.15	4.98	6.31	7.74	9.81	11.92	14.45	23.06	25.04
47	4.22	5.07	6.43	7.89	10.00	12.17	14.75	23.55	25.57
48	4.30	5.16	6.55	8.04	10.20	12.41	15.05	24.03	26.10
49	4.37	5.25	6.67	8.19	10.40	12.65	15.35	24.52	26.63
50	4.44	5.34	6.79	8.34	10.59	12.89	15.64	25.00	27.15
Add'l lbs.	.07 lb.	.09 lb.	.12 lb.	.15 lb.	.19 lb.	.24 lb.	.29 lb.	.48 lb.	.52 lb.

IMPORTANT: 1. Shipping weights listed for model numbers shipped in more than one carton have been adjusted to provide correct postage.

HEATH
Schlumberger

HEATH COMPANY
A Schlumberger Company
Benton Harbor MI 49022

ORDER FORM/ Agreement

PLEASE DO NOT WRITE IN THIS SPACE

843-

1 BILLING ADDRESS (Print or write plainly — always use same name)

Name_____

Apt./Lot/Bldg._____

Street Address_____

City_____ State_____ Zip_____

2 SHIPPING ADDRESS (If different from above)

Name_____

Apt./Lot/Bldg._____

Street Address_____

City_____ State_____ Zip_____

3 ADDRESS CHANGED SINCE LAST ORDER?
Please indicate old address.

Name_____

Apt./Lot/Bldg._____

Street Address_____

City_____ State_____ Zip_____

IMPORTANT ORDERING INFORMATION

1. Please use separate sheet to order parts, manuals or for any correspondence.
2. All prices are net FOB Benton Harbor, Michigan and apply to the U.S., APO and FPO areas only.
3. Prices and specifications are subject to change without notice.

SPECIAL BOOK ORDERING INFORMATION —There is a $10 MINIMUM for a book-only purchase. No minimum if books are ordered with kits. Do not calculate postage on books, simply add 50¢ for each book to the postage columns on the order blank.

4 METHOD OF SHIPPING

Mailable Items. We ship UPS for fastest delivery. Include Zone from Zone Chart ☐

Indicate other Preference_____
Blue Label Zone Customers: Please indicate UPS Blue Label Air Service if desired.

Motor Freight Items. Shipped transportation charges collect. If a single item is Motor Freight, all items will be shipped Motor Freight.

5 If merchandise is ordered from another catalog, please indicate catalog no._____ (from front cover)

6 Please give daytime phone number.
☐☐☐ (Area) ☐☐☐ ☐☐☐☐ (Number)

7 What new kits would you like us to make?_____

8 QUAN.	MODEL NO.	KIT DESCRIPTION	UNIT PRICE	UNIT TOTAL PRICE	SHPG. WT.	SHPG. CHARGES*

9 METHOD OF PAYMENT (check one)

☐ **Cash** — Check or money order only. If the charge for merchandise and transportation is less than the amount you send, we will refund the difference.

☐ **C.O.D.** — For orders of $10 or more only. 20% deposit (check or money order) must accompany order. Balance will be collected at delivery time (C.O.D. fees will be added to your order and collected on delivery).

☐ **Heath Revolving Charge**
☐ New Acc't. (Please fill out on reverse side.)
☐ Add to my existing Account
No._____

Signature_____
(necessary to send merchandise)

C.O.D. ORDERS

TOTAL AMOUNT OF ORDER	
Less 20% Deposit —	
Net Amount C.O.D.	

REVOLVING CHARGE ORDERS

TOTAL AMOUNT OF ORDER	
LESS: Down Payment —	
TOTAL AMOUNT less Down Payment	

TOTAL		**TOTAL SHPG. CHARGES**	
less allowance, if any —			
Merchandise **TOTAL** +			
Add 4% sales tax for all Michigan deliveries +			
Shpg. Charges from above +			
Plus amount due from previous order: Invoice #_____ +			
TOTAL AMOUNT OF ORDER			

*Shipping Charges are for mailable items only. Figure charges for each item individually. See Rate Chart on page 48.

WHEN ORDERING, PLEASE REMOVE ENTIRE ORDER FORM PAGE

TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022: REVOLVING CHARGE SECURITY AGREEMENT

I hereby purchase the total amount of merchandise listed on the reverse side plus shipping charges and tax, if any, less down payment, if any, plus the **FINANCE CHARGE** which, in lieu of being added to this contract in total as of the date hereof will be added monthly on the previous month's ending balance of my account before deducting payments and credits or adding purchases made during the current billing period. **FINANCE CHARGE** will be assessed on the balance according to the following schedule or in accordance with the laws of the State of my residence which ever is the lesser.

Account Balance Amount: ALL BALANCES. **Periodic Percentage Rate:** 1½%

ANNUAL PERCENTAGE RATE: 18%

The minimum **FINANCE CHARGE** assessed will be 50¢ on any small balances. If within 30 days from my billing date I pay the full outstanding balance shown on my statement, no **FINANCE CHARGE** on such balance, will be charged on any subsequent statement. The highest level of my balance reflected by the payment chart will govern my monthly payment, beginning 30 days from the cycle closing date shown on the statement, until such time as the total unpaid balance of each purchase is fully paid (minimum $10). Regular or Extended Terms are the two plans available for my use. To use the extended plan, the balance of my account must be at least $500.00. The amount of my monthly installment is determined from charts below.

REGULAR REVOLVING CHARGE

Charge up to:	$150	200	250	300	350	400	450	500
Pay Monthly:	$10	15	20	25	30	35	40	45

EXTENDED REVOLVING CHARGE

Charge up to:	$600	700	800	900	1000	1100	1200	1300	1400	1500
Pay Monthly:	$30	35	40	45	50	55	60	65	70	75

Add $5 per month for every $100 or fraction thereof over $1500.

I hereby grant to the above named creditor a security interest in all goods purchased until the purchase price and **FINANCE CHARGE** have been paid in full. I will not sell, transfer possession of, remove or encumber the property without your written consent. The account may be declared in default and the matters regarding default, right to cure (if any) and acceleration of account balances will be governed by the consumer protection laws of the state of my residence. My installments shall be applied as follows. In case of items purchased on different dates, the first purchase shall be deemed first paid for. In case of items purchased on the same date, the lowest price shall be deemed first paid for. We intend to obtain a consumer report in connection with the processing of your credit application. Upon request you will be informed of the name and address of the consumer reporting agency that furnished the report. You may inspect your report by contacting the reporting agency that made it. Subsequently consumer reports may be obtained from time to time in connection with the maintenance of your account.

NOTICE TO BUYER: 1. Do not sign this agreement before you read it or if it contains blank spaces. You are entitled to a copy of the agreement you sign. 2. The other side of this page is part of this contract. Notice: See accompanying statement for important information regarding your rights to dispute billing errors.

3. NOTICE: ANY HOLDER OF THIS CONSUMER CREDIT CONTRACT IS SUBJECT TO ALL CLAIMS AND DEFENSES WHICH THE DEBTOR COULD ASSERT AGAINST THE SELLER OF GOODS OR SERVICES OBTAINED PURSUANT HERETO OR WITH THE PROCEEDS HEREOF. RECOVERY HEREUNDER BY THE DEBTOR SHALL NOT EXCEED AMOUNTS PAID BY THE DEBTOR HEREUNDER.

TYPE OF ACCOUNT
☐ INDIVIDUAL
☐ JOINT

Sign here_____ Date_____
(Customer's Signature)

Sign here_____ Date_____
(Spouse's Signature) If Joint Account

Check Revolving Charge Plan Desired
☐ Regular ☐ Extended

FILL IN IF YOU ARE A NEW ACCOUNT, OR IF YOUR PREVIOUS ACCOUNT HAS BEEN PAID UP FOR 12 MONTHS OR MORE.

CREDIT APPLICATION TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022

Former Account No._____

IMPORTANT: Please fill in completely. **Omissions and errors cause delays** **SIGN REVOLVING AGREEMENT**

ACCOUNT To Be In The Name Of

First Initial Last | AGE | No. of Dependent Children

Present Residence: Address — Street | Area Code + Phone Number

City State Zip | How Long ___YRS___MO

☐ OWN ☐ RENT ☐ BOARD ☐ MARRIED ☐ UNMARRIED ☐ SEPARATED | TYPE OF ACCOUNT ☐ INDIVIDUAL ☐ JOINT | Social Security Number

Monthly Rent or Mortgage Payments $_____

Former Address If Less Than 3 Yrs. At Present Address

Street City State Zip | How Long ___YRS___MO

COMPLETE FOR PERSON REQUESTING ACCOUNT:

Employer's Name (Give Firm's Full Name) | How Long ___YRS___MO | Position | Salary (Monthly) $ | Business Phone

Employer's Address | (Child support, alimony and separate maintenance optional.) Other Income — Source(s) | Amount (Monthly) $

Former Employer — Name-Address | Position | How Long ___YRS___MO | Salary (Monthly) $

Bank — Branch Address City State Zip | ☐ Check ☐ Loan ☐ Savings

CREDIT REFERENCE: (Give Merchants, Firms, or Finance Companies with whom you do or have done business)

Firm Name	Address — Street, City, State	Account No.	Balance

Name Nearest Relative Not At Your Present Address | Relationship | Relative's Address

COMPLETE FOR SPOUSE IF JOINT ACCOUNT REQUESTED:

Spouse's Full Name (First, Initial, Last) | Age | Social Security Number

Employer's Name (Give Firm's Name) | Employer's Address | Business Phone

How Long ___YRS___MO | Position | Salary (Monthly) $ | Bank — Branch | ☐ Check ☐ Savings ☐ Loan

WHEN ORDERING, BE SURE TO REMOVE ENTIRE PAGE.

THE PRESIDENT'S CORNER



Dear Friends,

The past year was a good one for Heath, and I hope it was for you and your family. Our mail order sales reached a new high as did retail sales through Schlumberger Products Corporation. The new line of computer products met our expectations in the United States as well as in 20 other countries where they were introduced.

The sales of our educational products doubled last year, and, with the new self learning programs in development, we expect this trend to continue in 1979. You will find them all on pages 81-89.

I build most of our new products and find that I learn something with each kit. One of the many advantages of building your own electronic products is the educational value, so, in effect, we have been in the electronics learning business since 1947. However, if you feel a bit rusty as a result of recent developments in electronics, there is no easier or less expensive way to get up to running speed than by taking one of our programs. You may find, as I did, that even a brush-up on some of the basics isn't such a bad idea.

Early this year we will have completed a series of programs on the maintenance and repair of automobiles. Perhaps with their aid I can keep my eight year old car happy a while longer. I find we have respect for each other except in sub-zero weather when we both get a bit balky.

There is one thing all of us remember and that is the first car we ever owned. Mine was a Model-T Ford with a Stromberg Carlson carburetor. It was a thing of great beauty. Our programs don't include models of that vintage, although I could write the material from my fond memories.

D. W. Nurse

David W. Nurse, W8GCD

NEW! SUBSCRIBE NOW TO "PERSONAL LEARNING;" THE HEATH NEWSLETTER ABOUT CONTINUING EDUCATION

PERSONAL LEARNING is a quarterly newsletter published by Heath Company for users and customers of Heath's educational products. If you are an individual student, a teacher, or a company training director using Heath's individual learning programs or other educational products, PERSONAL LEARNING is for you. PERSONAL LEARNING will give you an advance look at new Heath programs. PERSONAL LEARNING will also keep you informed about the latest developments in adult continuing education, life long learning, and career training. PERSONAL LEARNING will feature stories about people who have benefited from Heath's programs on their jobs or in their hobbies. Also featured will be profiles of companies and schools using Heath's products and descriptions of their programs and successes. We will tell you how to get the most out of your training and apply it for maximum benefit. If you are committed to continuing education, you will want to subscribe to PERSONAL LEARNING. For your one year subscription to PERSONAL LEARNING, send $5.00 to PERSONAL LEARNING, Heathkit Continuing Education, Benton Harbor, MI 49022.

CAREER OPPORTUNITIES AT HEATH

Heath Company has several challenging positions open in the areas of Electrical Design & Factory Services. If your expertise is in instrumentation, audio, or communications equipment, please feel free to send resumes and salary requirements to:

Recruiting Office
Heath Company
Benton Harbor, MI 49022

We are an Equal Opportunity Employer M/F.

Copies of the Heathkit warranty or warranties for any other consumer product in this catalog costing more than $15 may be obtained free of charge by writing the Manager of Marketing Services, Heath Company, Benton Harbor, Michigan 49022.

Attention: Owners of GR-2000, GR-2001 and GR-2050 Color Televisions purchased between July 1974 and October 1978 including Correspondence Schools. A new capacitor to greatly increase reliability of your TV's high-voltage assembly is available free of charge. Order part no. 29-58 from Heath Parts Department, Benton Harbor, MI 49022

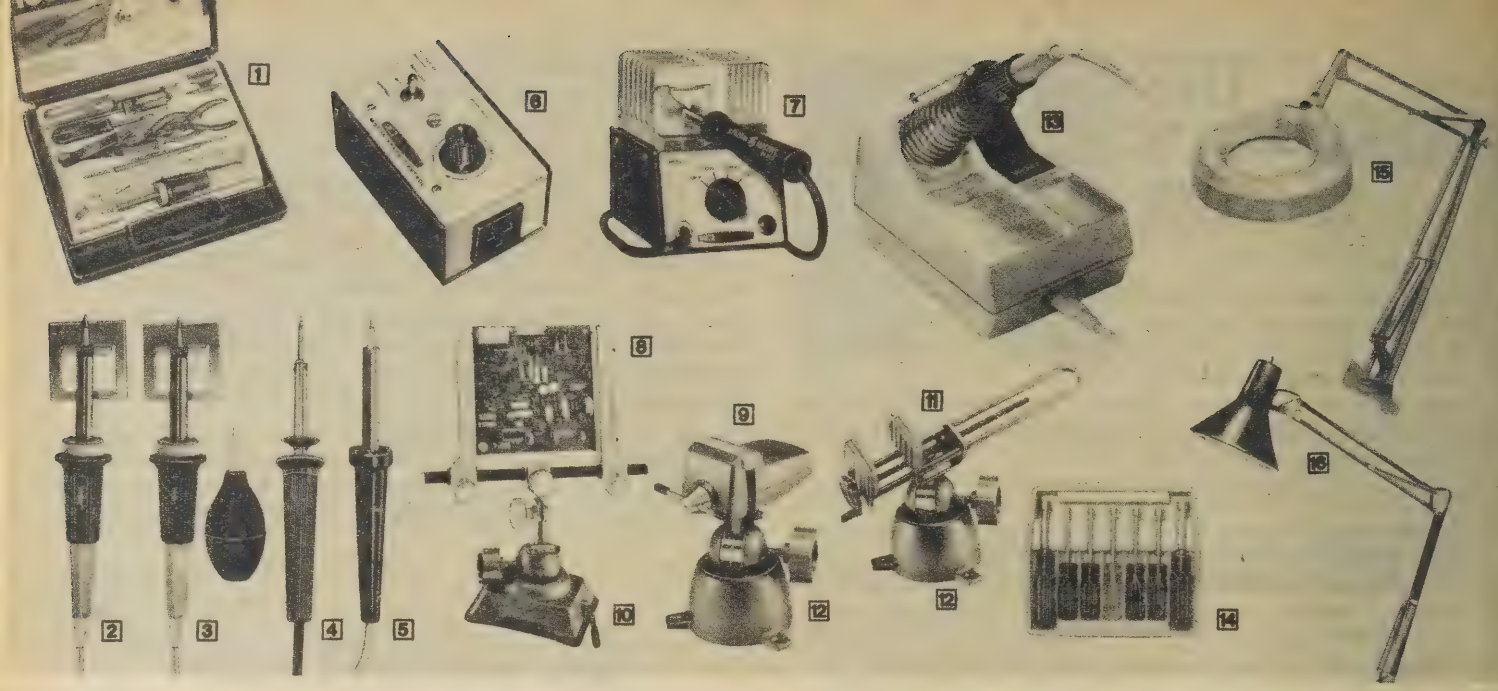
The following notice is required by the Fair Credit Billing Act:

IN CASE OF ERRORS OR INQUIRIES ABOUT YOUR BILL

The Federal Truth In Lending Act requires prompt correction of billing mistakes.

1. If you want to preserve your rights under the Act, here's what to do if you think your bill is wrong or if you need more information about an item on your bill:
   a. Do not write on the bill. On a separate sheet of paper write (you may telephone your inquiry but *doing so will not preserve your rights under this law)* the following:
      i. Your name and account number (if any).
      ii. A description of the error and an explanation (to the extent you can explain) why you believe it is an error.
      If you only need more information, explain the item you are not sure about and, if you wish, ask for evidence of the charge such as a copy of the charge slip. Do not send in your copy of a sales slip or other document unless you have a duplicate copy for your records.
      iii. The dollar amount of the suspected error.
      iv. Any other information (such as your address) which you think will help the creditor to identify you or the reason for your complaint or inquiry.
   b. Send your billing error notice to the address on your bill which is listed after the words: "Send Inquiries to:,"
      Mail it as soon as you can, but in any case, early enough to reach the creditor within 60 days after the bill was mailed to you. If you have authorized your bank to automatically pay from your checking or savings account any credit card bills from that bank, you can stop or reverse payment on any amount you think is wrong by mailing your notice so the creditor receives it within 16 days after the bill was sent to you. However, you do not have to meet this 16-day deadline to get the creditor to investigate your billing error claim.
2. The creditor must acknowledge all letters pointing out possible errors within 30 days of receipt, unless the creditor is able to correct your bill during that 30 days. Within 90 days after receiving your letter, the creditor must either correct the error or explain why the creditor believes the bill was correct. Once the creditor has explained the bill, the creditor has no further obligation to you even though you still believe there is an error, except as provided in paragraph 5 below.
3. After the creditor has been notified, neither the creditor nor an attorney nor a collection agency may send you collection letters or take other collection action with respect to the amount in dispute; but periodic statements may be sent to you, and the disputed amount can be applied against your credit limit. You cannot be threatened with damage to your credit rating or sued for the amount in question, nor can the disputed amount be reported to a credit bureau or to other creditors as delinquent until the creditor has answered your inquiry. *However, you remain obligated to pay the parts of your bill not in dispute.*
4. If it is determined that the creditor has made a mistake on your bill, you will not have to pay any *FINANCE CHARGES* on any disputed amount. If it turns out that the creditor has not made an error, you may have to pay *FINANCE CHARGES* on the amount in dispute, and you will have to make up any missed minimum or required payments on the disputed amount. Unless you have agreed that your bill was correct, the creditor must send you a written notification of what you owe; and if it is determined that the creditor did make a mistake in billing the disputed amount, you must be given the time to pay which you normally are given to pay undisputed amounts before any more *FINANCE CHARGES* or late payment charges on the disputed amount can be charged to you.
5. If the creditor's explanation does not satisfy you and you notify the creditor *in writing* within *10 days* after you receive his explanation that you still refuse to pay the disputed amount, the creditor may report you to credit bureaus and other creditors and may pursue regular collection procedures, but the creditor must also report that you think you do not owe the money, and the creditor must let you know to whom such reports were made. Once the matter has been settled between you and the creditor, the creditor must notify those to whom the creditor reported you as delinquent of the subsequent resolution.
6. If the creditor does not follow these rules, the creditor is not allowed to collect the first $50 of the disputed amount and *FINANCE CHARGES*, even if the bill turns out to be correct.
7. If you have a problem with property or services purchased with a credit card, you may have the right not to pay the remaining amount due on them, if you first try in good faith to return them or give the merchant a chance to correct the problem. There are two limitations on this right:
   a. You must have bought them in your home state or if not within your home state within 100 miles of your current mailing address; and
   b. The purchase price must have been more than $50.

However, these limitations do not apply if the merchant is owned or operated by the creditor, or if the creditor mailed you the advertisement for the property or services.



Heath-approved tools to make your kitbuilding faster and easier

[1] **Kitbuilders' Tool Set.** Includes wire stripper; diagonal side cutter; small long-nose pliers; three screwdrivers (3/32", 1/8", 3/16"); Weller WP-25 soldering iron; nutdriver; nut starter; soldering aid; and solder.
Model GHP-1270, Shpg. wt. 3 lbs. 29.95

[2] **Heath-approved Weller 25-Watt Pencil Soldering Iron.** 1/8" chisel tip develops 860° heat.
Model GDP-207, Shpg. wt. 1 lb. 9.95

[3] **3-Heat Solder/de-Solder Set.** Weller 25-watt pencil iron develops 860°. Includes de-solder, bulb.
GDP-1009, Shpg. wt. 1 lb. 12.95

[4] **Soldering Iron For Close Work.** Wall 25-watt pencil soldering iron for work on high-density boards. 3-wire cord. For 120 VAC.
GDP-1231, Shpg. wt. 1 lb. 6.95

[5] **Heath Approved Soldering Iron** for use on high-density circuit boards. 25 watts. Pencil tip.
GDP-1105, Shpg. wt. 1 lb. 7.95

[6] **Motor Speed Control.** Ideal for use with any universal motor with rating of 15 amps or less. (Not for use with Dremel tools).
Kit GD-973A, Shpg. wt. 2 lbs. 19.95

[7] **3-Heat Soldering Iron Kit.** Stand with metal cage keeps iron secure. 3 ranges. Six foot power cord. 120 VAC.
Kit GH-17A, Shpg. wt. 5 lbs. 27.95

[8] **Circuit Board Holder.** Holds most any shape or size circuit board. Spring loaded for quick change. Tilts 220 degrees.
GDP-1254, Shpg. wt. 2 lbs. 16.95

[9] **Vertical Jaw Vise Head** — For most hobby applications. Nylon jaws open to 2¼".
GDP-1253, Shpg. wt. 2 lbs. 9.95

[10] **Vacuum Base** — Attaches securely to any smooth, non-porous surface. Powerful rubber suction pad holds without marring tabletop. Overall height 3¾". Base dimensions 5 x 4¼".
GDP-1252, Shpg. wt. 2 lbs. 16.95

[11] **Vertical Vise Head** — Holds bulkier items — model parts, chassis, etc. Jaws open to 6½". Neoprene pads are reversible and replaceable.
GDP-1255, Shpg. wt. 2 lbs. 9.95

[12] **Standard Height Base** — Designed for permanent installation. Three mounting lugs let you attach it securely to the work surface. Choose desired vise head from three styles listed.
GDP-1251, Shpg. wt. 2 lbs. 11.95

[13] **Heat Controlled Solder Station.** Weller WTCPN soldering station is transformer powered and features "closed loop" control of tip temperature. Has heat shield, indicator lamp, and sponge. With 700°F tip.
GDP-1108, Shpg. wt. 5 lbs. 49.95

Set of Replacement Tips for above (all 700°F). Set includes: 1/16" Screwdriver, 1/8" Screwdriver, 3/16" Screwdriver, 1/32" Long Conical, 3/64" Long Screwdriver.
GDP-1109, Shpg. wt. 1 lb. 9.95

[14] **Heathkit Nut Driver Set.** 3/16", 1/4", 5/16", 3/8", 11/32", 7/16" and 1/2" sizes.
Model GDP-204, Shpg. wt. 2 lbs. 12.95

[15] **Illuminated Magnifier.** Fluorescent lighting and 5" diameter 3 diopter lens take the strain out of close work at your bench. Requires 22-watt T-9 Circline Fluorescent tube (not included). Easy mechanical assembly only.
Kit GDP-200, Shpg. wt. 7 lbs. 42.95

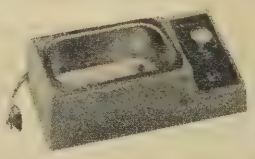
[16] **Extension Lamp Kit.** Extension arm comes assembled. You attach socket, shade and cord. 34" reach, 360° sweep; vented shade, and moveable base clamp. Less bulb.
Kit GDP-202, Shpg. wt. 4 lbs. 16.95

Electronic Darkroom Timer helps you get better prints and enlargements



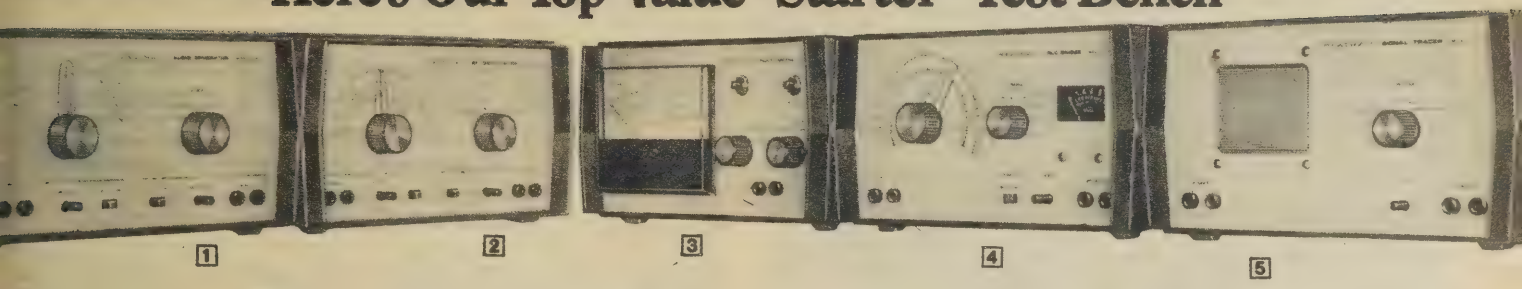
Control your enlarger in two switch-selected ranges — up to 99 seconds in 1 second steps or up to 9.9 seconds in 0.1 second steps. Automatically turns the safe light off when printing and a time/focus switch turns the safelight off when focusing. 2% repeatability. 3¼" H x 6⅝" W x 6½" D.
Kit PT-15, Shpg. wt. 4 lbs. 36.95

Ultra-convenient Ultra-sonic Cleaner



Cleans jewelry, dentures, any delicate items. Simply fill the stainless steel tank with any safe detergent or solvent, place the object or objects in the tank, set the timer and that's it! Tank measures 6" L x 4" W x 2⅜" D. Overall, 11" L x 5¾" W x 3⅛" H. For 120 VAC.
Kit GD-1150, Shpg. wt. 4 lbs. 69.95

Here's Our Top-Value "Starter" Test Bench



Heath's 5280 Series of test instruments is designed for the beginning serviceman, hobbyist or student. It's an excellent low-cost way to assemble a truly versatile test bench that will let you work on all types of electrical and electronic equipment. Whether you're doing hi-fi servicing, working on television equipment, or just experimenting, each 5280 Series instrument represents real value.

SPECIAL 5% DISCOUNT OFFER! Order the IPA-5280-1 Power Supply and any three 5280 Series Instruments and you can deduct 5% from the total price (excluding shipping and handling charges).

1 Versatile Sine and Square Wave Audio Oscillator

The IG-5282 Audio Oscillator is an instrument that you'll find useful in many audio test applications. Frequency output is in four ranges, from 10 Hz to 100 kHz, in either sine or square wave modes. Use the IG-5282 as an audio signal source during signal tracing or, with the appropriate associated equipment, use the sine wave output for audio stage gain and distortion analysis. If you're interested in determining frequency response, you'll find the IG-5282's square wave output ideal for your purposes (with appropriate associated equipment). Construction is rugged and assembly time is greatly reduced by single circuit board assembly. A great value and an important addition to your bench.

Kit IG-5282, Shpg. wt. 5 lbs. **37.95**

IG-5282 SPECIFICATIONS: Frequency Output: 10 Hz to 100 kHz in four ranges. **Sine Wave Output Voltage:** 0-3 volts rms. **Square Wave Output Voltage:** 0-3 volts peak. **Power Requirements:** Two 9-volt batteries or the optional IPA-5280-1 Power Supply. **Dimensions:** 11" H x 5¾" W x 7¾" D. **Net Weight:** 3¼ lbs.

2 Quality RF Oscillator for radio/TV alignment work

If you're doing radio alignment work the ideal addition to your bench is the Heath IG-5280 RF Oscillator. This unit, which includes probes, is suitable for use in alignment of tuned stages in AM, FM, and television receivers. Output is divided into five bands, from 310 kHz to 110 MHz, and features an extra 100 to 220 MHz band of calibrated harmonics. An added feature of the IG-5280 is its 1000 Hz audio output. This signal, available at a front panel jack, is ideal for tracing and isolation of circuit defects in receiver audio stages and also serves as a source of internal AM modulation. Construction is simple and the IG-5280 makes a versatile addition to your bench.

Kit IG-5280, Shpg. wt. 5 lbs. **37.95**

IG-5280 SPECIFICATIONS: RF Output: Frequency Range: 310 kHz to 110 MHz in five bands, 100 MHz to 220 MHz on harmonics. **Output voltage:** 100 mV approx. **Internal Modulation:** 1000 Hz. **AF Output: Frequency:** 1000 Hz. **Output Voltage:** 2.0 volts rms (open circuit). **Power Requirements:** Two 9-volt batteries of IPA-5280-1 power supply. **Dimensions:** 11" W x 5¾" H x 7¾" D. **Weight:** 3¼ lbs.

3 Low-cost Multimeter measures volts/ohms/DC current

The IM-5284 represents one of the best price/performance values ever offered by Heath. This high performance solid state multimeter gives you 4 different functions and a large easy-to-read panel meter that insures your measurements are on the dot. Features include AC and DC voltage measurement to 1000 volts and DC current measurement to 1000 mA full scale. The ohmmeter function is divided into four ranges, X1, X100, X10k, and X1MΩ. Power requirements are met by internal batteries or by the optional IPA-5280-1 power supply and 1 "C" cell. Includes test probes.

Kit IM-5284, Shpg. wt. 5 lbs. **37.95**

IM-5284 SPECIFICATIONS: DC Voltmeter: Ranges: 0-1, 0-10, 0-100, 0-1000 volts full scale. **Accuracy:** ±3% of full scale. **AC Voltmeter: Ranges:** 0-1, 0-10, 0-100, 0-1000 volts full scale. **Accuracy:** ±5% of full scale. **DC Milliammeter: Ranges:** 0-1, 0-10, 0-100, 0-1000 mA full scale. **DC Input Resistance:** 10 megohms. **AC Input Resistance:** 1 megohm. **Ohmmeter: Ranges:** X1, X100, X1k, X1MΩ. **Power requirements:** Two 9-volt batteries and 1 "C" cell or IPA-5280-1 Power Supply and 1 "C" cell. **Dimensions:** 11" W x 5¾" H x 7¾" D. **Weight:** 3¼ lbs.

4 RCL Bridge for experimentation and design work

If you've been waiting to add an RCL bridge to your bench because the price was just too high...look again. The Heath IB-5281 RCL Bridge is priced right for your pocket book and has the features that you can appreciate. A tough 5280 series cabinet houses the solid-state circuitry that lets you easily determine unknown values of resistance, inductance and capacitance. Resistance is indicated in three ranges from 10Ω to 10MΩ, inductance in three ranges from 10 μH to 10H and capacitance, also in three ranges, from 10 pF to 10 μF. Easy single circuit board construction speeds assembly. With component clips.

Kit IB-5281, Shpg. wt. 5 lbs. **37.95**

IB-5281 SPECIFICATIONS: Resistance Ranges: 10Ω to 10MΩ in three ranges. **Inductance Ranges:** 10 μH to 10 H in three ranges. **Capacitance Ranges:** 10 pF to 10 μF in three ranges. **Oscillator Frequencies:** 1 kHz, 10 kHz, 100 kHz. **External Standard Range:** 1:1 to 10:1. **Power Requirements:** two 9-volt batteries, or IPA-5280-1 power supply. **Dimensions:** 11" W x 5¾" H x 7¾" D. **Weight:** 3½ lbs.

5 Signal Tracer for radio and TV audio circuits

A great addition to your trouble shooting arsenal is the IT-5283 Signal Tracer. A diode equipped RF probe (furnished with the kit) lets you quickly trace receiver and transmitter circuits to reveal component and stage failures. Flip the probe to its straight through (DC) position and you can easily locate defective circuitry in all types of audio components and systems. In the audible ohmmeter position, the IT-5283 changes tone depending on the test point voltage or resistance and allows you to easily trace signal flow through logic circuits. Turn the IT-5283 off and its speaker is connected to two panel jacks which allow you to use it as a handy bench test speaker.

Kit IT-5283, Shpg. wt. 5 lbs. **37.95**

IT-5283 SPECIFICATIONS: Functions: Substitute speaker, AF signal tracing, RF signal tracing, Audible volt/ohmmeter. **Speaker:** 3" permanent magnet. **Power Requirements:** Two 9-volt batteries and/or IPA-6280 power supply. **Cabinet Dimensions:** 11" W x 5¾" H x 7¾" D. **Weight:** 3¼ lbs.



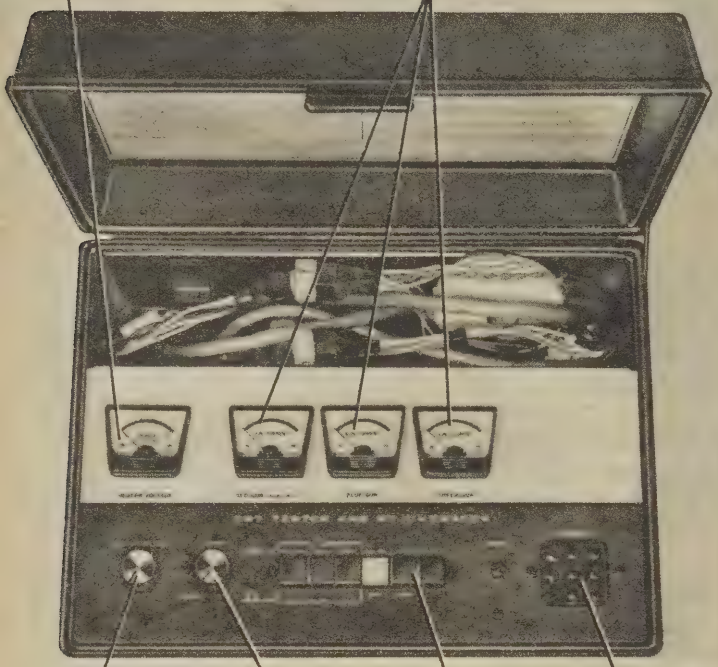
Power Supply for all 5280 Instruments

Provides all voltages required by 5280 series equipment. Features full wave rectification, capacitor filtering and dual integrated circuit regulators to insure correct voltage output. Powers all five instruments simultaneously and has handy switch which allows operation from either 110 or 220 VAC outlets without rewiring.

Kit IPA-5280-1, Shpg. wt. 3 lbs. **24.95**

IPA-5280-1 SPECIFICATIONS: Output Voltage: +9 and −9 VDC ± 9%. **Maximum Output Current:** 100 milliamps. **Integrated Circuit and Diode Complement:** UA78, UA79 regulator IC. IN4002 silicon diode. **Power Requirements:** 100 to 135 VAC or 200 to 270 VAC, 50/60 Hz, 7 watts maximum. **Dimensions:** 6" H x 3¾" W x 3" D. **Fuse:** ¼-amp, 3AG, slow-blow.

Heathkit TV Service



Heathkit CRT Tester/Rejuvenator brings old TV Picture Tubes back to LIFE!

Save $45 on assembled unit!

$89.95 Kit

- **Test, clean and rejuvenate even IN-LINE GUN Color CRT's**
- **Individual meters monitor grid current for each color gun**
- **Clean and rejuvenate modes for each gun**
- **Heater/Cathode short indicator**

The IT-5230 is a deluxe CRT rejuvenator/tester that is priced well within reach of any service shop. With it you can test, clean and rejuvenate almost all current CRT's including in-line-gun types.

Positive action pushbuttons control all tests and processes for easy operation. Individual guns can be cleaned, tested and rejuvenated by using the front panel pushbuttons. And separate meters for each gun allow easy tracking of the individual grid currents. The main power control also sets control grid voltage level. A separate heater voltage meter allows monitoring of the heater voltage supplied to the cathode of the CRT.

An indicator lamp gives visual confirmation of CRT short-circuits and the visual display restore indicator glows brighter as the rejuvenating current is increased. To insure correct CRT restoration, a separate cleaning process is applied after rejuvenation to assure proper tube operation.

The IT-5230 is designed for portability and a transformer power supply assures reliable operation even at the low line voltages likely to be encountered in the field. A self-contained storage tray offers plenty of room for test cables and small tools.

Kit IT-5230, Shpg. wt. 9 lbs. **89.95**

Factory assembled version of above.
ST-5230, Shpg. wt. 9 lbs. ..... **Was $185.00 Now 140.00**

IT-5230 SPECIFICATIONS: Sockets Supplied: 14-pin for 90° color tubes; 13-pin for in-line color tubes; 8-pin for black-and-white tubes; 7-pin for black-and-white tubes. **Heater Supply Voltage:** Variable from 2 volts to 12 volts at 1 ampere. **Test Cables Supplied:** 4' heavy duty. **Power Requirement:** 105-135 VAC, 60/50 Hz (50 watts maximum at 60 Hz). **Dimensions:** 5.12" high x 10" deep x 13.5" wide.



1

1 Solid state color bar and dot pattern Generator for fast, easy TV servicing

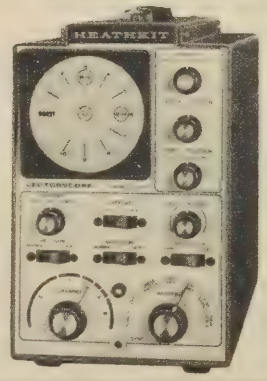
$99.95

- **Logic circuitry insures sharp stable alignment patterns**
- **Solid state crystal controlled time base**

Provides 12 patterns plus a clear raster for purity adjustments, and patterns are available in the exclusive Heath 3x3 display or the familiar 9x9. Has RF output for channels 2 through 6, variable up to 50,000 μV, variable plus and minus going video, front panel gun shorting switches and lead piercing grid jacks, front panel sync output, 4.5 MHz sound carrier oscillator, two 500W AC receptacles.

Kit IG-5228, Shpg. wt. 8 lbs. **99.95**

IG-5228 SPECIFICATIONS: Output signals: Video — Greater than ±1 V peak-to-peak composite signal. RF — Variable to 50,000 μV output, channels 2 through 6. Sync. — Greater than 3.5 V peak-to-peak signal. Control Grids (3) — Individual red, blue, and green control grid signals for viewing chroma signal demodulator phase adjustments. **Power supply:** full wave zener diode regulated. Input — 120/240 VAC, 60/50 Hz. Output — 3.6 VDC, 500 mA, zener diode regulated. **Dimensions:** 5½" H x 13½" W x 8" D.



2

Combines a Vectorscope and a Color Bar Generator for Fast, Easy and Thorough Color TV Servicing

$169.95

2 Combination Vectorscope/Color Generator adds real versatility to your service bench

A really versatile instrument for color TV servicing! The vectorscope accurately shows the chroma signal being fed to the CRT to indicate missing or weak colors, proper adjustment of the burst phase transformer, 3.58 MHz oscillator, reactance coil, bandpass transformer, color demodulation angle. The color generator provides 12 patterns plus a raster for purity adjustments in the standard 9x9 display or the exclusive Heath 3x3 format. Has tuning for channels 2-6, RF output variable to 50,000 μV, plus or minus going video signals, front panel sync output, lead-piercing grid jacks, and front panel gun shorting switches.

Kit IO-4101, Shpg. wt. 13 lbs. **169.95**

Instruments-Outstanding Value!

Here's shirt pocket television servicing that's affordable! Versatile, Portable Color Alignment Generator

$64.95 Kit

- **16 different displays at the flip of a switch**
- **Push-button on with built-in battery saver**
- **Solid-state reliability**

From Heath, a **truly portable** color alignment generator with the versatility you NEED for complete color TV alignment and convergence. The IG-5240 offers outstanding performance, with crystal-controlled carrier and color oscillator for real precision, accuracy and stability. Its convenient "shirt-pocket" size makes it the one to take along for in-the-field service calls every time, and you'll find yourself using it every day in the shop! It's a versatile, low-cost service tool for hobbyists, too.

The IG-5240 is really easy to operate. Simply connect its output cable to the VHF terminals of any color TV. The RF carrier frequency is calibrated for channel 4. An "on" pushbutton turns the IG-5240 on, four program slide switches select any of the 16 displays available. A color level control adjusts the color intensity of the three color patterns.

A special "battery saver" timing circuit turns the display "off" automatically after a minimum of five minutes "on". This conserves battery power and lets you get the most efficient operation from your batteries. The unit uses two inexpensive 9-volt transistor batteries (NEDA #1604 or equivalent), which provide a minimum of 8 hours continuous operation.

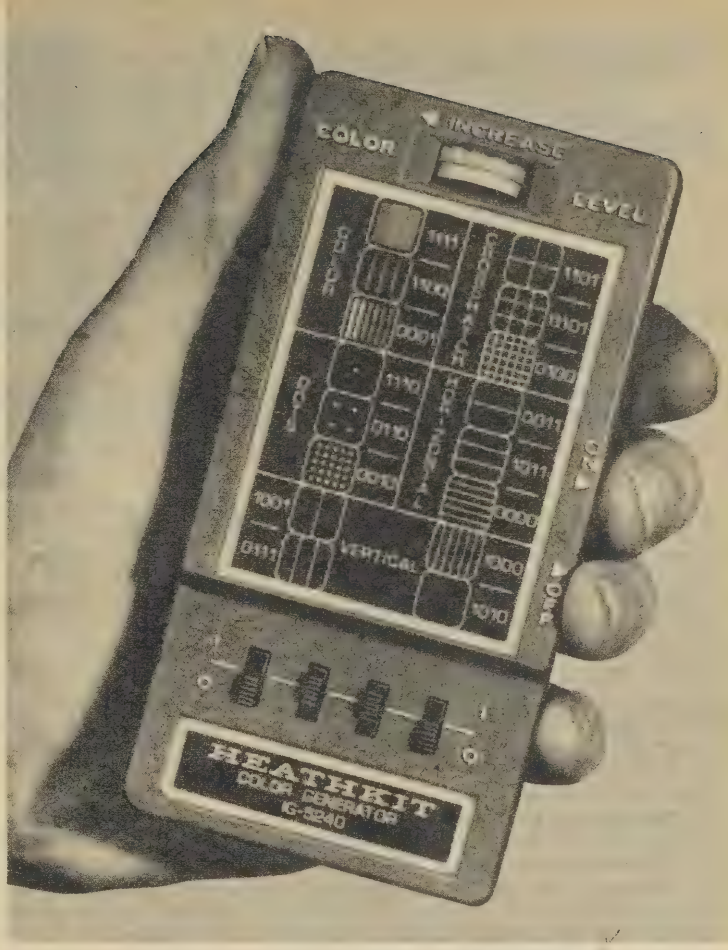
For features, convenience and versatility, we don't think you can find a better color alignment generator than the IG-5240. Put it in your service shop today!

Kit IG-5240, Shpg. wt. 2 lbs. **64.95**

Factory assembled version of above.

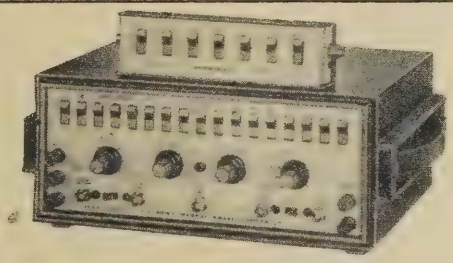
SG-5240, Shpg. wt. 1 lb. **95.00**

IG/SG-5240 SPECIFICATIONS: Chroma Carrier: 3563.795 kHz ±0.005% crystal-controlled. **Master Timer:** 377.616 kHz ±0.005% crystal-controlled. **RF Carrier:** Channel 4, 67.250 MHz ±0.01% crystal-controlled. **RF Output Level:** 5000 μV min. into 300 ohms. **Video Modulation:** 50% (approx.) **On-Time Interval:** 5 minutes min. OFF pushbutton can override time out. **Power Requirement:** Two 9-volt transistor batteries; with 180 mAH capacity (NEDA #1604). **Dimensions:** 5.4" L x 2.75" W x 1.15" D.



Heath's Post-Marker/ Sweep Generator for faster easier TV alignment

$189.95



The IG-5257 makes receiver alignment fast and easy. It features 15 selectable markers, video and audio carrier markers for channels 4 and 10, and a diode modulator for Video Sweep Modulation. Other features include a 400 Hz tone for FM receiver alignment, and a multi-step attenuator pad to assure proper impedance matching and to avoid stage overloading.

Kit IG-5257, Shpg. wt. 16 lbs. **189.95**

IG-5257 SPECIFICATIONS: Marker frequency: 100 kHz. **Marker frequencies, crystal-controlled:** 3.08, 3.68, 4.08, and 4.50 MHz ±0.01%. 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, ±0.005%; 67.25 and 193.25 MHz ±0.01%. **Modulation frequency:** 400 Hz. **Input impedance:** External Marker/Sweep, and Attenuator—75 ohms. Trace in—220 k ohms. **Output impedance:** Marker Output, Sweep Output, and Attenuator—75 ohms. Scope Vert.—1 k ohms. **Bias voltage:** Two individually adjustable supplies: Positive or negative polarity. **Sweep frequency ranges:** LO Band—2.5 to 5.5 MHz ±1 dB. IF Band—39 to 49 MHz ±1 dB. RF band—64 to 72 MHz ±1 dB. **Attenuator:** Total of 70 dB in seven steps. **Power requirement:** 120 V, 60 Hz AC at 4.5 watts.

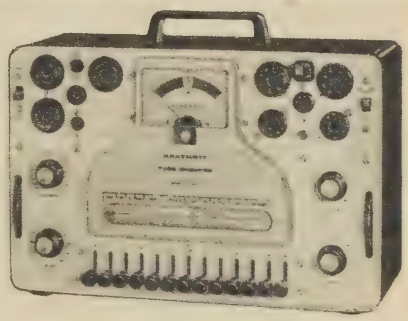
Heathkit 40 kV High-Voltage Probe Meter

Makes TV tube voltage measurements fast and convenient. Measures DC voltages up to 40 kV with ±3% accuracy. The on-off switch on the handle protects the meter during hookup and when the probe is not in use. Easy operation, easy assembly. 1½" H x 1⅞" W x 15" D.

Kit IM-5210, Shpg. wt. 2 lbs. **19.95**

This low-cost Heathkit Tube Checker is the right addition to your service bench

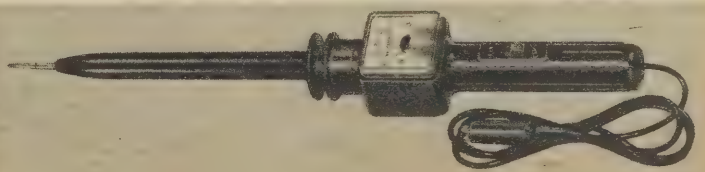
$129.95



Essential for radio-TV servicing! Tests tubes on the basis of total emission, for shorts, leakage, open elements, and filament continuity. Has good-?-bad indicator to show relative quality, neon bulb indicator for filament continuity and leakage or shorts between elements. Easy-to-operate thumbwheel roll chart makes locating tube types fast and easy. Positive-action toggle switches for easy test setups.

Kit IT-3117, Shpg. wt. 12 lbs. **129.95**

IT-3117 SPECIFICATIONS: Sockets: 4-pin, 5-pin, 6-pin combination and pilot light. 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. **Meter:** 1 mA BAD-?-GOOD scale, illuminated. **Line Voltage Adjustment:** Step type. **Roll Chart Mechanism:** Constant tension, free-rolling, thumbwheel operation, illuminated. **Filament Voltage:** 0.63, 1.4, 2, 2.35, 2.5, 3.15, 4.2, 4.7, 5, 6.3, 7.5, 9.45, 12.6, 19.6, 25, 32, 50, 70, 110 VAC. **Element Test Voltages:** 30, 100, 250 VAC. **Power Requirement:** 120 VAC, 50/60 Hz. **Dimensions:** 8½" H x 13" W x 5½" D.

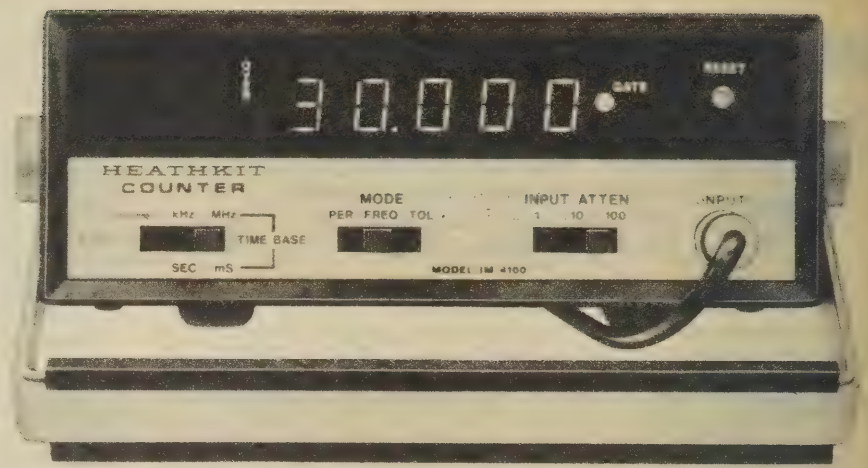


Heath's lowest-priced Frequency Counter

$129.95 Kit

charg-a-kit

- **Bright, easy-to-read 5-digit display with overrange indication**
- **High-accuracy 10 MHz crystal timebase assures precise measurements**
- **Can be operated with external timebase for added versatility**
- **Operates from 120/240 VAC or 12 VDC for in-the-field use**
- **Push-button reset for fast and convenient operation**



The Heathkit IM-4100 is an almost unbelievable counter value. It's a full five-digit frequency counter which also functions in period and totalize modes. It provides built-in input attenuation and 12-volt operation all in one compact package. The latest digital design and a stable 10 MHz crystal oscillator assure accuracy and precision on all measurements. Its excellent resolution makes it ideal for a variety of signal alignment applications.

As a frequency counter, the IM-4100 is guaranteed to 30 MHz with 1 Hz resolution. Sensitivity is 20 mV from 50 Hz to 30 MHz, 50 mV below 50 Hz.

In the period mode, it measures intervals up to 99.999 seconds. Using the millisecond time base, it resolves to 1 μsec! This mode can be used for low frequency measurements with high accuracy. Just position the TIME BASE switch to mS and the MODE switch to PER. Then solve the equation f=1/period, using the displayed value.

The totalize mode will add up (totalize) event pulses up to a count of 99,999. Pushing the RESET button starts the count at zero. An inhibit signal can stop the totalize mode at any time, without loss of the displayed count.

The front panel attenuator switch allows the amplitude of input signals to be divided by 1, 10 or 100. The pushbutton RESET switch quickly resets the display to zero in any mode. Display includes overrange indicator and a gate lamp.

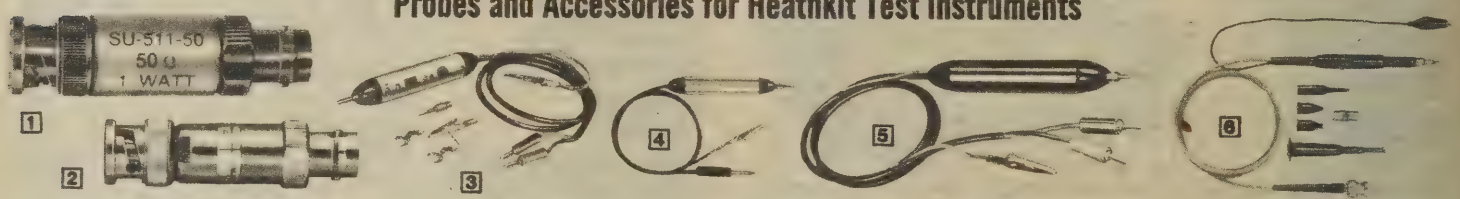
A rear panel switch easily selects internal or external time base. The rear panel connector can be used as an input for an external time base signal, frequency ratio measurements, or as an output to check the internal 10 MHz time base, or to provide a convenient frequency standard of 1 MHz for bench use. The IM-4100 operates on 120/240 VAC, or 12-volt DC. DC power is applied through a rear panel connector (mating connector supplied).

The IM-4100 is an easy kit to build, with an open chassis layout and circuit board construction. Or you can order it factory assembled and tested.

Kit IM-4100, Shpg. wt. 6 lbs. **129.95**
SM-4100, Assembled and tested version of above. 6 lbs. **210.00**

IM-4100 SPECIFICATIONS: FUNCTIONS — Frequency: 5 Hz to 30 MHz minimum. **Period:** 1 μsec resolution to 99.999 sec. **Totalize:** 1-99,999 events. **Sensitivity:** 20 mV rms (50 mV, 5 Hz to 50 Hz). **Period Pulse Width:** 25 nsec minimum. **Low Frequency Signal Risetime:** 1 msec for signals less than 10 Hz. **Input Impedance:** 1 megohm shunted by less than 35 pF. **Protection:** 240 volts rms at 60 Hz. **Attenuator:** X1, X10, X100 fixed compensation. **TIME BASE — Frequency:** 10 MHz. **Setability:** ±10 ppm, maximum 0° to 40°C ambient. Aging rate, 10 ppm per year. **OSCILLATOR CONNECTION — External Input Frequency:** DC to 20 MHz. **External Input Sensitivity:** TTL or 2.5 V rms from 50-ohm source. **Internal Output:** TTL signal at 1 MHz. **GENERAL — Gate Interval:** kHz-1 sec, MHz-1 msec. **Manual Gate:** DC control in events mode using external OSC input connector. **Display Time:** 200 msec plus gate interval. **Power Requirement:** 105-130 or 210-260 VAC (switch-selected). 60/50 Hz, (at 25 watts); or 9-14 VDC at 1.25 amperes. **Dimensions:** 2¾" H x 7¼" W x 10½" D (less handle).

Probes and Accessories for Heathkit Test Instruments



1 50-Ohm Termination for frequency counters and scopes. DC to 1 GHz; power rating, 1 watt. VSWR; 250 MHz, 1.2:1, 600 MHz, 2:1.
Assembled SU-511-50, Shpg. wt. 1 lb. **15.00**

2 RF Fuse in UHF BNC-to-BNC connector. Prevents burnout. DC to 500 MHz range; 50 ohms; 1.2:1 VSWR (max.); insertion loss 1.80 dB max. at 500 MHz. With spare fuses.
Assembled SU-512-50, Shpg. wt. 1 lb. **45.00**

3 Low capacitance scope probe provides direct or X10 attenuated operation; options for 3.3 or 1 megohm input resistance.
Kit PK-1, Shpg. wt. 1 lb. **8.95**

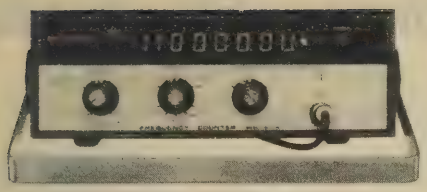
4 RF probe for RF measurements from 1000 Hz to over 100 MHz; 11 meg input; 1000 VDC max. at tip; 90 V rms max.
Kit PK-3, Shpg. wt. 1 lb. **6.95**
Assembled PKW-3, Shpg. wt. 1 lb. **8.95**

5 Scope demodulator probe for distortion checks, RF & IF display. 30 V rms max., 500 VDC max. Banana plug/BNC wiring option.
Kit 337-C, Shpg. wt. 1 lb. **5.95**

6 Combination X1, X10 Scope Probe. Has 2-position multiplier for X1 and X10 probe tip. DC to 15 MHz (X1) and DC to 80 MHz (X10) bandwidths. X10 risetime, 4.0 nS. Compensation range of 15-50 pF.
Assembled PKW-105, Shpg. wt. 1 lb. **27.95**

PKA-101-1 Accessory Pack. Includes three assembled tips, two 6-inch ground leads and one 12-inch ground lead. For use with the PKW-101 and PKW-104 only.
PKA-101-1, Shpg. wt. 1 lb. **5.95**

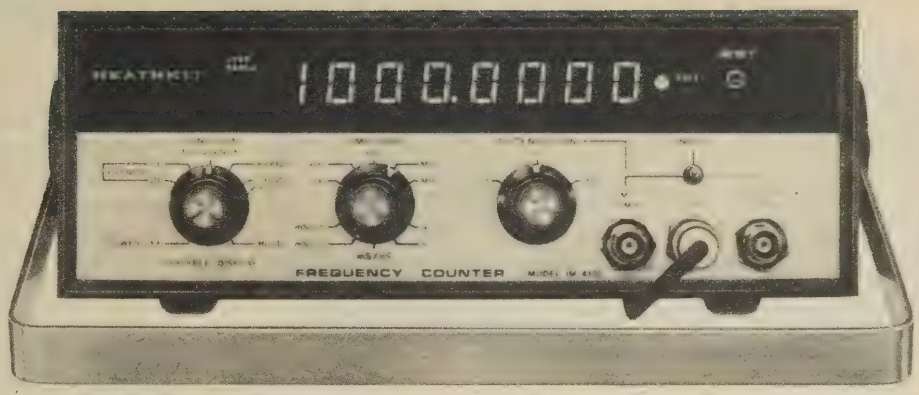
Accessory cables...for inter-connecting scopes, counters, etc. All cable is RG-58/U, 50 ohm impedance. Shpg. wt. (each), 1 lb.
Assembled SU-501-3, 3 ft., BNC/BNC **7.50**
Assembled SU-501-6, 6 ft., BNC/BNC **7.50**
Assembled SU-503-3, 3 ft., BNC/Banana **7.50**



IM-4110—110 MHz input



IM-4120—110 and 250 MHz inputs



IM-4130—110 MHz, 250 MHz and 1 GHz inputs

Heathkit High-Performance Frequency Counters

As low as $199.95 Kit

- **Frequency, Events, Period and Period Averaging**
- **Bright Red LED 8-Digit Readout**
- **Optional 12-Volt and Battery Operation**
- **Overrange and Gate Lamp Indicators**

These new Heathkit counters give you the accuracy and reliability you NEED for frequency measurement on radio transmitters, hi-fi components, test instruments, any counting job! They offer excellent flexibility, accuracy and resolution, PLUS features you simply won't find on others in this price range.

A switchable attenuator on the 110 MHz input divides the input signal x1, x10 or x100 to facilitate accurate measurements of large amplitude signals. The time base switch selects the gate time and the resolution of the display. The 4120 and 4130 time bases are controlled by a high quality TCXO (temperature-compensated crystal oscillator) with a temperature stability of ± 1 ppm and an aging rate of <5 ppm/yr for excellent stability. (The 4110's crystal oscillator has stability of ±10 ppm and an aging rate of <10 ppm/yr.)

Separate 50-ohm inputs are used for frequency ranges above 110 MHz to maintain low VSWR, while inputs below 110 MHz are 1 mg shunted by less than 25 pF. There's a rear panel oscillator input/output jack for an external time base, frequency ratio measurements, or it can be used as a signal source for breadboarding, calibrating or marker applications.

These counters include additional functions—events, period and period averaging. In events OP, the counting circuit increments for each input pulse with the resulting counts displayed. Events CL stops the events count and displays the accumulated total.

In the period mode, the readout displays a single period of the signal.

In the period averaging mode, the counter displays the time of a single period based on a 1000-period average. This results in a more accurate and higher resolution measurement.

The counters feature rugged metal cases with non-marring front panels and a 12-position handle which rotates a full 360° for easy storage and mounting. The counter circuitry operates completely free of the case for easy service too. Easy kit assembly and NO-INSTRUMENT calibration. Counters operate on 120/240 VAC (switch-selected), 12 VDC with IMA-4130-1 accessory at left, or portable battery operation with IMA-4130-1 and SMA-4130-2 batteries.

	IM-4110	IM-4120	IM-4130
Frequency Range	5 Hz to 110 MHz	5 Hz to 250 MHz	5 Hz to 1 GHz
Inputs	5 Hz to 110 MHz	5 Hz to 110 MHz, 5 MHz to 250 MHz	5 Hz to 110 MHz, 5 MHz to 250 MHz, 100 MHz to 1 GHz
Input Sensitivity	25 mV RMS	25 mV RMS	25 mV RMS
Input Impedance	1 meg shunted by <25 pF	50 ohms, VSWR less than 1.5:1 110 MHz, same as 4110	50 ohms, VSWR, less than 2:1 110 MHz, same as 4110 250 MHz, same as 4120
Protection	250 V (DC + peak AC) to 100 kHz	5 Vrms	5 Vrms
Time Base Freq.	10 MHz	4 MHz TCXO	4 MHz TCXO
Aging Rate	<10 ppm/yr	<5 ppm/yr	<5 ppm/yr
Temp. Stability (0 to 40°C ambient)	±10 ppm	±1 ppm	±1 ppm

5 Hz to 110 MHz Counter. Applications include CB, low-band AM and FM, AM and FM broadcast bands, musical instruments, video tape systems, crystals, etc. Has single 110 MHz input.

Kit IM-4110, Shpg. wt. 12 lbs. **199.95**

Assembled and tested version of above.

SM-4110, Shpg. wt. 10 lbs. **330.00**

5 Hz to 250 MHz Counter. For above applications, plus marine and aircraft radios, 2-meter and 220 FM, general lab and research work, more. Has 5 Hz to 110 MHz and 5 MHz to 250 MHz inputs.

Kit IM-4120, Shpg. wt. 12 lbs. **329.95**

Assembled and tested version of above.

SM-4120, Shpg. wt. 10 lbs. **530.00**

5 Hz to 1 GHz Counter. For virtually every counting application including 450 FM, Military uses and land mobile. Has three separate inputs—5 Hz to 110 MHz, 5 MHz to 250 MHz and 100 MHz to 1 GHz.

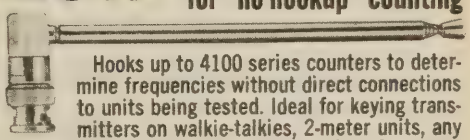
Kit IM-4130, Shpg. wt. 12 lbs. **549.95**

Assembled and tested version of above.

SM-4130, Shpg. wt. 10 lbs. **865.00**

NEW

Telescoping Antenna for "no hookup" counting



Hooks up to 4100 series counters to determine frequencies without direct connections to units being tested. Ideal for keying transmitters on walkie-talkies, 2-meter units, any devices where direct connection of a frequency counter is inconvenient or inaccessible.

SU-510, Shpg. wt. 1 lb. **9.95**

12-volt Converter. Mounts inside counter cabinet, permits 12-volt mobile operation of 4110, 4120 and 4130. Can also be fitted with 12 rechargeable NiCad batteries (not included, order below) to allow portable operation for in-the-field counting.

Kit IMA-4130-1, Shpg. wt. 3 lbs. **29.95**

SMA-4130-1, Assembled. 3 lbs. **50.00**

Set of 12 NiCad batteries.

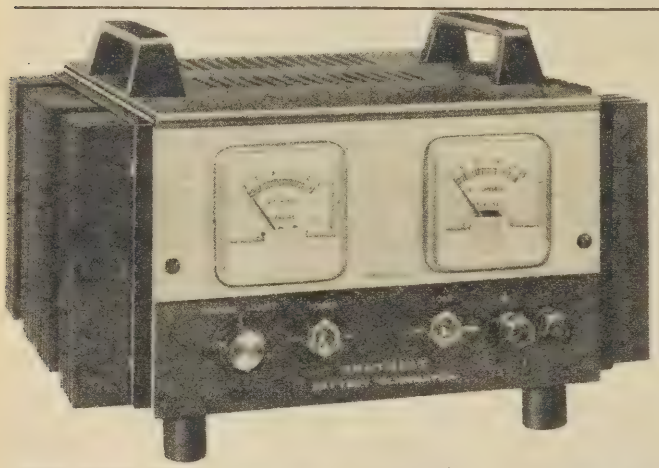
SMA-4130-2, Shpg. wt. 4 lbs. **89.95**

OTHER IM-4110, 4120 AND 4130 SPECIFICATIONS: FUNCTIONS: Events: 1 to 99,999,999. **Period Resolution,** 0.1 μS. **Period Average,** 1000 periods. **Period Pulse Width,** 100 nsec min. **Low Frequency Signal Risetime,** 1 msec to signals less than 10 Hz. **Attenuation,** (110 MHz input) x1, x10, x100 fixed compensation. **TIME BASE: Setability:** ±0.1 ppm. **OSCILLATOR CONNECTION: External Input Frequency,** 1 MHz. **External Input Sensitivity,** TTL or 2.5 Vrms for 50-ohm source. **External Input Protection,** −5 V peak to +10 V peak. **Internal Output,** >1.5 V p-p into 50 ohms at 1 MHz. **TCXO Warmup,** 10 minutes. **GATE INTERVAL: Frequency,** 1 mS to 10 S. **Period,** determined by period of input frequency. **Period Average,** 1000 periods of input frequency. **Display Time,** 200 mS to 20 S including a count hold position. **Power Requirements:** 105-130 VAC or 210-260 VAC (switch-selected), 50-60 Hz at 35 watts; or 9-14 VDC at 2.5 A max. with IMA-4130-1 accessory. **Dimensions:** 10¼" W x 13¼" D x 4" H (less handle).

Power your bench with these quality AC and

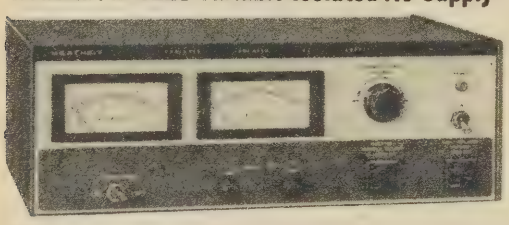


IP-2718 SPECIFICATIONS: Regulation: Load: less than 0.1% variation from no load to full load on 20-volt supplies; less than 2% variation from no load to full load on 5-volt supply. **Line:** less than 0.2% variation for line voltage change of 10 volts on 20 volt supplies; less than 0.15% variation for line voltage change of 10 volts on 5-volt supply. **Power Requirement:** 100-135 or 200-270 VAC, 60/50 Hz, 100 watts full load. **Dimensions:** 4½" H x 10¾" W x 9" D.



IP-2715 SPECIFICATIONS: Output Voltage: variable from 9-15 VDC. **Output Current:** 12 amps continuous, 20 amps intermittent (per derating curve in manual). **Ripple:** less than 1% at full load. **Regulation:** less than 2% variation from no load to full load. **Fuses:** 7A, 3 AG slow-blow primary; 20A, 3 AG output. **Power Requirement:** 110-130 VAC, 7A or 220-260 VAC, 3.5 A, 60/50 Hz. **Dimensions:** 5¼" H x 11" W x 11" D.

Heathkit IP-5220 Variable Isolated AC Supply



$119.95

Provides 0-140 VAC Variable Output

Provides complete isolation between the AC power line and any electrical equipment that is plugged into its front panel variable output socket. The 0-140 VAC is useful anywhere a slow run-up of line voltage is needed — locating circuit faults caused by high or low voltage or testing equipment with unknown power requirements. A full 360 volt-amperes of AC power is available at the front panel variable output socket. Switch-selected 1A and 3A ranges are fused individually on the front panel. Also has fused variable output socket.

Kit IP-5220, Shpg. wt. 28 lbs. **119.95**

IP-5220 SPECIFICATIONS: Input Voltage: 120 V @ 60 Hz for specified output. **Output Voltage:** 0-140 V @ 60 Hz. **Voltmeter Range:** 0-150 VAC. **Ammeter Ranges:** 0-1 & 0-3 A, AC. **Output Current:** 3 A max. 10 A (direct line connection). **Output Power:** 360 Volt-Amperes maximum. **Dimensions:** 5.5" H x 15" W x 10.5" D.

Tri-Output Experimenter's Power Supply

$89.95 Kit **Three Floating outputs can be connected in any combination for a wide variety of output voltage and current capability**

Now you can combine a fixed 5 VDC output with two continuously adjustable 0-20 VDC outputs for circuit designs requiring more than one voltage supply. It's one of the lowest cost, most versatile power supplies you'll find anywhere.

The outputs of the two 20 VDC variable supplies and the fixed 5 VDC output can be interconnected in any combination to provide both positive and negative voltages with a fixed reference, or they can be allowed to "float" at no reference level. A clutch-coupled control allows the two 20 VDC supplies to "track" each other at any specified voltage difference — ideal for analog circuits requiring both a positive and negative voltage. The fixed 5 VDC at 1.5 A is useful for digital circuits.

All outputs are short-circuit proof, with automatic current limiting. They can be operated independently, in series or in parallel. A switchable front panel meter monitors all outputs.

Kit IP-2718, Shpg. wt. 12 lbs. **89.95**

Assembled SP-2718, Shpg. wt. 12 lbs. **185.00**

Heavy-Duty Power Supply/Battery Eliminator

$139.95 **Provides variable 9-15 volt output capable of 12 amps continuous, 20 amps intermittent**

The Heathkit IP-2715 heavy duty power supply provides you with a clean, accurate voltage source necessary for the reliable service of Ham, Marine, and CB communications gear. In fact, the IP-2715 is ideal for any DC voltage application where high-current capability is necessary.

Features include two easy to read front panel meters which permit the user to continuously monitor both current and voltage. Front panel adjustment allows continuously variable voltage selection from 9 to 15 VDC for precision selection of power for the unit under test and a two position norm/standby switch removes voltage from the output binding posts. Excellent output accuracy is assured by a zener reference diode which automatically regulates to maintain fixed output even under varying load conditions.

Large double heat sinks provide good heat dissipation for long use without damage to transistors, 4 output transistors and an extra-large transformer insure accurate low ripple operation. Kit assembly is easy and fast with printed circuit boards and a wiring harness to minimize point-to-point wiring. Use the IP-2715 on your bench for all your communications servicing. You'll find it to be one of the most useful service instruments you can own.

Kit IP-2715, Shpg. wt. 31 lbs. **139.95**

Heathkit 0-400 VDC General-Purpose Power Supply



$119.95 Kit

This versatile supply provides 0-400 VDC at 0-100 mA continuous (125 intermittent) with excellent line and load regulation. Has front panel voltage and current meters and built-in circuit protection. Binding posts are insulated from chassis to allow positive or negative high voltage and bias operation. The IP-17 is versatile enough for the service technician or experimenter and makes a great general purpose supply for the laboratory too.

Kit IP-2717, Shpg. wt. 19 lbs. **119.95**

Assembled SP-2717, Shpg. wt. 19 lbs. **210.00**

IP-2717 SPECIFICATIONS: Additional Outputs: 0 to –100 VDC at 1 mA variable bias voltage, 6.3 VAC at 4 amps., 12.6 VAC at 2 amps. (25 VA max. AC load), filament voltage. **Regulation:** Output variation less than 1% from no load to full load. **Ripple:** Less than 10 millivolts rms. **Output Impedance:** Less than 10 ohms, DC to 1 MHz. **Meters:** Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 mA. **Power Requirement:** 120/240 VAC, 60/50 Hz, 150 W max. **Dimensions:** 5⅛" H x 13¼" W x 11" D.

DC Supplies



2700 Series Power Supplies

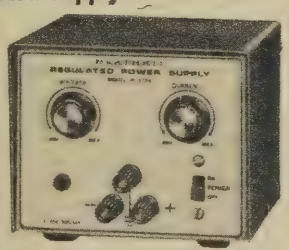
These power supplies offer you a choice of digital or analog readout. Digital models have 3½ digit display two-decade auto-ranging to provide high resolution. The analog supplies use a highly legible meter with ±3% accuracy at rated output. Each supply can be operated in either a constant voltage or current mode. Both function independently of each other and voltage may be controlled from the front panel or through rear panel programming terminals. Each has remote programming and voltage sensing capabilities also. A full dissipative regulator in these supplies allows indefinite short circuit operation with no damage. Output is protected against accidentally applied voltages and is isolated from the chassis for floating, negative ground or positive ground operation.

IP-2710, 30V @ 3A analog, 34 lbs. **169.95**
Assembled SP-2710, 30V analog, 34 lbs. **280.00**
Kit IP-2711, 30V @ 3A digital, 36 lbs. **229.95**
Assembled SP-2711, 30V digital, 35 lbs. **350.00**

IP/SP-2700 SERIES SPECIFICATIONS: Max. Rated Output: IP/SP-2710 & 2711: 30V, 3A. **Load Regulation:** Voltage: ±0.05% +1 mV, Current: ±0.10% +3.5 mA. **Line Regulation: Voltage:** ±0.05% +1 mV. Current: ±0.10% +1 mA. **Ripple & Noise:** Voltage: 1 mV RMS; 0.03% of rated output, peak-to-peak. **Voltage/Current Readout (Switchable):** Analog: 3½", 100°, meter. Digital: 3½-digit (1999), two-decade, auto-ranging, digital meter. **Readout Accuracy:** Voltage: Analog ±3% of rated output; Digital ±0.5% of reading ±1 count using lab standards, ±1.0% of reading ±1 count using built-in calibrator. Current: Analog — ±3% of rated output; Digital — ±1.0% of reading ±4 count using lab standards, ±1.5% of reading ±4 count using built-in calibrator. **Readout Response Time: (Digital):** 2 seconds to within 5 counts. **Operating Modes:** Constant voltage, constant current, auto-series, auto parallel. **Power Requirement:** 120/240 ± 10/20 VAC; 60/50 Hz, 2.0/1.0 Amps max. **Overall Dimensions:** 5.5" H x 15" W x 13.5" D. (NOTE: Specs measured in accordance with NEMA standards (PYI-1972) after 30-minute warmup period.)

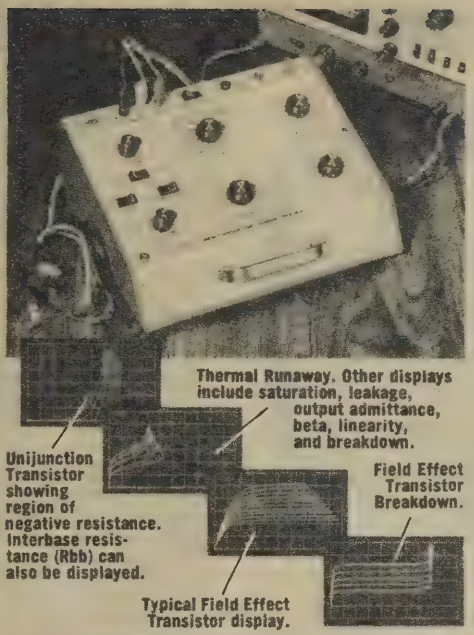
1-15 VDC Regulated Supply

$26.95



Perfect for servicing, testing or designing transistor radios, portable tape recorders and other low-voltage solid-state devices. Continuously adjustable from 1-15 VDC at 500 mA output. Has 500 mV line and load regulation and fully adjustable current limiting. AC or DC programming capability lets you control output voltage from another source.

Kit IP-2728, Shpg. wt. 5 lbs. **26.95**



IT-3121 SPECIFICATIONS: Sweep Voltage Ranges: 0-40 volts at 1 ampere max. 0-200 volts at 200 mA max. **Step Currents:** .002, .005, .01, .02, .1, .2, 2, 5, and 10 mA/step, ±3%, ±250 nA offset current max. **Step Voltages:** .05, .1, .2, .5, and 1 volt/step, +3%, ±5% mA maximum offset voltage. **Calibration Source:** 9 volts ±2% in 1 volt steps. **Polarity:** PNP and NPN (P Channel-N Channel). **Oscilloscope Requirements:** Bandwidth to 20 kHz or greater. (DC-coupled oscilloscope is recommended). **Power Requirement:** 110 to 130 or 220 to 260 VAC. **Dimensions:** 4½" H x 11¼" W x 10" D.

The fast, easy way to check semiconductor parameters is with your oscilloscope and the IT-3121 Curve Tracer

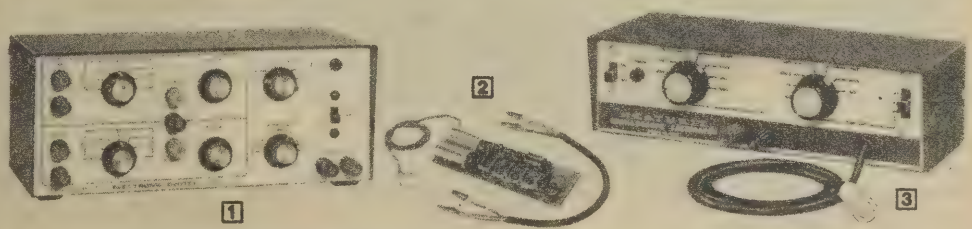
- **Tests bipolar transistors, diodes, SCR's, FET's, etc.**
- **Lets your oscilloscope display gain, leakage, breakdown voltage, saturation and more**
- **Easy kit assembly, easy operation**

Take the guesswork out of semiconductor testing with the Heathkit IT-3121 Curve Tracer. An invaluable tool for the designer, technician or the serious electronic hobbyist. Just connect the IT-3121 to any oscilloscope with horizontal sensitivity of 0.5 V/div. and vertical sensitivity of 1 V/div. and adjustable horizontal gain, and get an accurate display of operating parameters for virtually any discrete semiconductor. Devices such as bipolar transistors, diodes, SCRs, triacs, FETs, etc. can be inspected or tested for specific applications.

Plug-in cables are supplied for fast, easy scope hookup. A calibration switch permits fast and accurate scope calibration. You can display fundamental parameters such as gain (beta), leakage, breakdown voltage, saturation, forward conduction voltage, output admittance, linearity, capacitance effects, temperature effects and others (see insets for typical displays). The extensive manual included in each kit tells how to interpret each display.

Low profile styling and the sloped front panel permit the Curve Tracer to sit in front of most oscilloscopes without blocking the CRT. A convenient handle provides portability. Extra leads (included) allow you to test large devices or make in-circuit tests. The versatility, accuracy, and reliability of this test instrument will make it a valuable addition to your work bench for years to come.

Kit IT-3121, Shpg. wt. 10 lbs. **99.95**



These accessories help you get more value from your scope!

1 Heathkit Scope Switch

Add dual trace function to your oscilloscope. Gives any single beam scope with external trigger input dual-trace versatility. Provides simultaneous display of two separate input signals for comparisons, observing phase relationships, etc. Also can be used as impedance coupler, preamp or square wave generator in experimental circuits.

Kit ID-4101, Shpg. wt. 5 lbs. **44.95**

ID-4101 SPECIFICATIONS: Signal Gain: >10 times. **Maximum input signal:** 600 VDC or 600 VAC p-p. **Input impedance:** 1 megohm/50 pF. **Maximum signal output: loading:** 1000 ohm minimum. **Power requirement:** 120/240 V, 60/50 Hz, 6 W. **Dimensions:** 4¼" H x 10⅜" W x 5⅛" D.

2 Low-priced Scope Calibrator

Crystal controlled time base for scope calibration generates a square wave output in ranges from 1 kHz to 1 MHz. Output is at TTL levels and the 1 kHz output is adjustable from 0 to 4.7 V/pk. Requires 6 volt power supply.

Kit IOA-4510-1, Shpg. wt. 1 lb. **14.95**

3 Deluxe Scope Calibrator

The IG-4505 is a practical oscilloscope calibrator at a sensible price. It provides all the waveforms necessary to adjust sweep speeds, vertical calibration, delay line terminations, high frequency compensation and attenuator compensation. Good for scopes with up to 35 MHz bandwidths.

Kit IG-4505, Shpg. wt. 4 lbs. **47.95**

IG-4505 SPECIFICATIONS: TIME CALIBRATION: Range: 0.5 sec. to 1μs square wave accurate to within 0.01%. **Amplitude.** ≈200 mV peak. **Output:** 50 ohms terminated cable. **VOLTAGE CALIBRATION: Ranges:** 1 mV to 100 V peak square wave. **Accuracy:** To within 2% with 1MΩ load referenced to 1 V position. **Rise Time:** ≤2 μs. **Frequency:** DC, 2 Hz to 10 kHz. **Power Requirement:** 120-240 Volts AC, 60/50 Hz, 12 watts.

Economical Multi-Purpose Oscilloscopes



DC to 5 MHz oscilloscope featuring complete control functions — great for TV and audio servicing and repair

$189.95 Kit

HEATH charg-a-kit REVOLVING CHARGE

7-position variable time base locks up waveforms fast

Versatile, selectable triggering — including a special TV position, easily matches the IO-4541 to most service situations

An economical scope for pro and hobbyist

What are his requirements? What kind of features does the professional and the serious hobbyist need in an oscilloscope? When we were satisfied with the answers, we designed a scope perfect for service and repair — the Heathkit IO-4541.

The IO-4541 is an economical triggered scope which gives you features and performance not found in others in this price range. A stable triggering circuit is used to "lock up" solid waveform displays (not the recurrent sweep generator type found in many other scopes). The 4541's full set of triggering controls include: normal or automatic modes; switch-controlled AC or DC coupling; and front panel input of external triggering sources. There's even a special TV position, which, when selected, allows low frequencies to pass while rejecting the high — making it very easy for the IO-4541 to trigger on the vertical component of a complex video signal. All front panel trigger controls are clearly labeled for "no mistake" operation.

The IO-4541's horizontal amplifier accepts external inputs from DC to 100 kHz and you may switch select any one of seven calibrated time bases, 200 milliseconds per centimeter to 0.2 microseconds per centimeter, from the scope's front panel. In addition a variable control provides uncalibrated time base settings between steps.

A vertical input sensitivity of 20 millivolts per centimeter and nine calibrated vertical attenuator positions, up to 10 volts per centimeter, will accommodate a broad range of input signals, and a variable gain control gives precise control between settings.

To make measurements easier, a precisely ruled 8 x 10 centimeter graticule serves as a faceplate to cover the IO-4541's CRT. A bright, blue-green, medium persistance phosphor insures an easy to read display and to minimize the possibility of display error the cathode ray tube features partial mu-metal shielding.

To improve stability under varying line conditions, the IO-4541 incorporates 3 different power supplies and two power transformers. One supply acts as a voltage doubler and provides the necessary voltage for the CRT. The other two are full wave bridge configured and supply both regulated and unregulated voltages to the scope's circuit boards and amplifiers.

The IO-4541's flush mounted handle allows you to stack the instrument and avoid the crowding so common on many service benches. In addition, the scope's durable, lightweight cabinet gives the unit a sleek modern appearance and easy-to-carry portability.

Easy to build and offering excellent sensitivity, the IO-4541 proves to be the ideal choice for TV and audio servicing and repair, hobby and experimenter work. When you've checked the features, considered the performance, and compared it with the others, its easy to see why the rest just don't measure up!

Kit IO-4541, Shpg. wt. 23 lbs. **189.95**

Factory assembled and calibrated version of above.

SO-4541, Shpg. wt. 19 lbs. **330.00**

IO-4541 SPECIFICATIONS: VERTICAL: Bandwidth: DC to 5 MHz ±3 dB. **Attenuator:** 1, 2, 5 sequence, calibrated and variable. **Rise Time:** 70 ns. **Overshoot:** 5% at 1 kHz. **Impedance:** 1 MΩ/38 pF. **Sensitivity:** 20 mV/cm. **SWEEP: Type:** Triggered. **Range:** 200 ms — .2 μs, 7 steps plus variable. **Trigger Source:** Int/Ext/Line. **Trigger Modes:** AC/DC/TV; +/— Slope; Auto/Norm. **HORIZONTAL: Sensitivity:** .25 V/cm. **Bandwidth:** DC to 100 kHz. **Impedance:** 1 MΩ/50 pF. **Ext. Horiz. Input:** X1 and X10 attenuator. **GENERAL: CRT:** 5DEP31F, 8 x 10 cm, green, medium-persistance phosphor, 5" round, flat-face tube. **Accelerating Potential: Approx.** 1.5 kV. **Graticule:** Painted, 8 x 10 cm. **Power Requirements:** 110-130 VAC or 220-260 VAC, 50/60 Hz, 35 watts. **Dimensions:** 8" H x 13" W x 17" D.



The Heathkit IO-4560 — it's the lowest priced auto-triggering oscilloscope anywhere!

$129.95

- Full 5 MHz bandwidth
- Auto triggering
- Excellent for the hobbyist
- Extremely economical

IO-4560 SPECIFICATIONS: VERTICAL CHANNEL: Input Impedance: 1 megohm. **Sensitivity:** 100 mV/cm. **Maximum Input Voltage:** 400 volts DC. **Frequency Response:** DC to 5 MHz ±3 dB. **Attenuator:** X1, X10, X100, AC or DC. **HORIZONTAL CHANNEL: Input Impedance:** 100 kΩ. **Sensitivity:** 0.25 volt/cm (uncalibrated). **Frequency Response:** DC to 100 kHz. **TIME BASE: Sweep:** 20 ms to 0.2 μs/cm (uncalibrated). **Trigger Mode:** Automatic. **GENERAL: CRT:** 5DEP31F, 8 x 10 cm viewing area. Blue-green, medium persistance phosphor, 5" round, flat-face tube. **Graticule:** 8 x 10 cm. **Power Requirements:** 110-130 or 220-260 VAC. 60/50 Hz 35 watts. **Dimensions:** 8" H x 13" W x 17" D.

Now you can have the most universal of all test instruments on your bench — the oscilloscope. The 4560's ability to display many types of voltage waveforms permits study of complex signals, such as those found in audio devices, television receivers, transmitters and other electronic equipment. It's ideal for service techs and hobbyists. Operation couldn't be easier. In addition to the power switch, there are only nine switches and controls, for correct operation — even the first time. The large 8 x 10 cm screen makes for easy waveform measurements. Auto-triggering provides automatic, positive locking of the displayed waveform. A stable display is assured for any frequency up to the full 5 MHz bandwidth. The uncalibrated sweep speed control provides continuous adjustment from 20 ms/cm to 0.2 μs/cm.

The DC to 5 MHz vertical bandwidth is more than adequate for general design and service work. Maximum vertical sensitivity is 100 mV. Vertical input impedance is 1 megohm for low circuit loading. For phase and frequency measurements, an external horizontal input can be applied directly through the front panel input jack. It has 0.25 V/cm sensitivity with DC to 100 kHz bandwidth. Display stability is excellent because the low voltage supplies for the amplifiers and sweep circuit are zener regulated. And the primary circuit of the power transformer is fused for protection from overload.

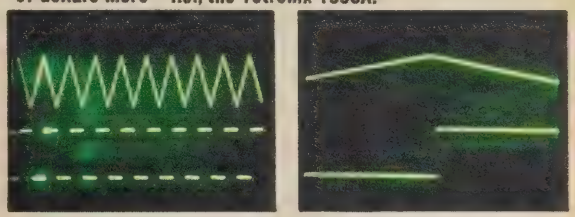
Kit IO-4560, Shpg. wt. 19 lbs. **129.95**

DC-35 MHz DUAL-TRACE DELAYED-SWEEP Oscilloscope

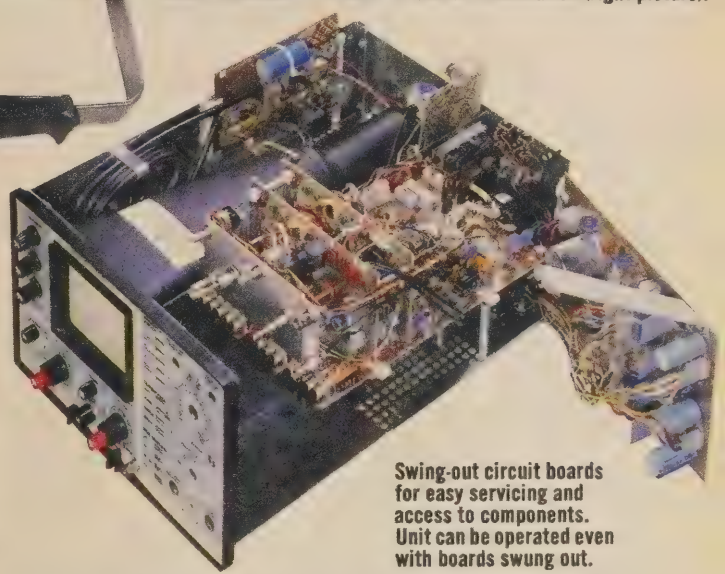


$869.95 Kit

The Heathkit IO-4235 is the most advanced oscilloscope Heath has ever developed! We started with the same team who designed our superb IO-4510, surrounded them with additional designers, technicians, engineers, writers, draftsmen and illustrators—invested nearly 10-man-years and came up with a product which is unmatched in performance, quality and features at its price! This oscilloscope can be directly compared with other oscilloscopes costing literally hundreds of dollars more—i.e., the Tetronix T935A.



The delayed sweep takes the user selected portion of the waveform (intensified portion in the left picture) and magnifies it the desired number of times for closer examination (right picture).



Swing-out circuit boards for easy servicing and access to components. Unit can be operated even with boards swung out.

new! for winter ●

HEATH charg-a-kit REVOLVING CHARGE

NO OTHER MANUFACTURER OFFERS ALL THESE FEATURES AT THIS PRICE!

● Smooth rolloff allows observation of signals beyond 50 MHz ● Less than 10 nS rise time for observation of complex fast-rise signals ● Vertical delay lines for observing the leading edge of signals ● 2 mV vertical deflection sensitivity at full bandwidth ● Dual-trace for simultaneous observation of two separate signals ● Algebraic ADD with the ability to invert either channel for observing differential signals ● Sweep speeds from 50 nS/cm to 0.2 sec/cm, plus 5 times expansion, for an effective sweep speed of 10 nS/cm at the highest sweep rate ● Triggering to greater than twice the specified vertical bandwidth ● Single-sweep function for observing random signals ● A full complement of trigger sources, couplings and modes including a unique TV coupling which triggers on alternate fields for a steady display of VITS ● 8x10 cm mesh CRT with internal graticule for parallax-free measurements ● 10 kV post acceleration voltage for the brightest display we have ever offered in an oscilloscope

The IO-4235 laboratory-quality oscilloscope offers TRUE professional performance at an affordable Heath price! It's the oscilloscope you'll want on your bench for years to come.

The IO-4235's delayed sweep circuit uses a separate time base to generate a faster sweep which displays a selected portion of the normal waveform. Because the start and length of the delayed sweep are user controlled, any given portion of the normal waveform can be displayed at a much higher rate. In fact, using a 1000 times expansion the displayed jitter will be less than ½ cm.

The 8x10 cm mesh CRT features 10 kV post acceleration voltage—2½ times greater than any oscilloscope we've ever offered—to give you truly outstanding brightness and greater writing speeds. In fact, the IO-4235 is bright enough to pick up the fast, narrow signals other scopes might miss. This CRT is among the finest available for this application.

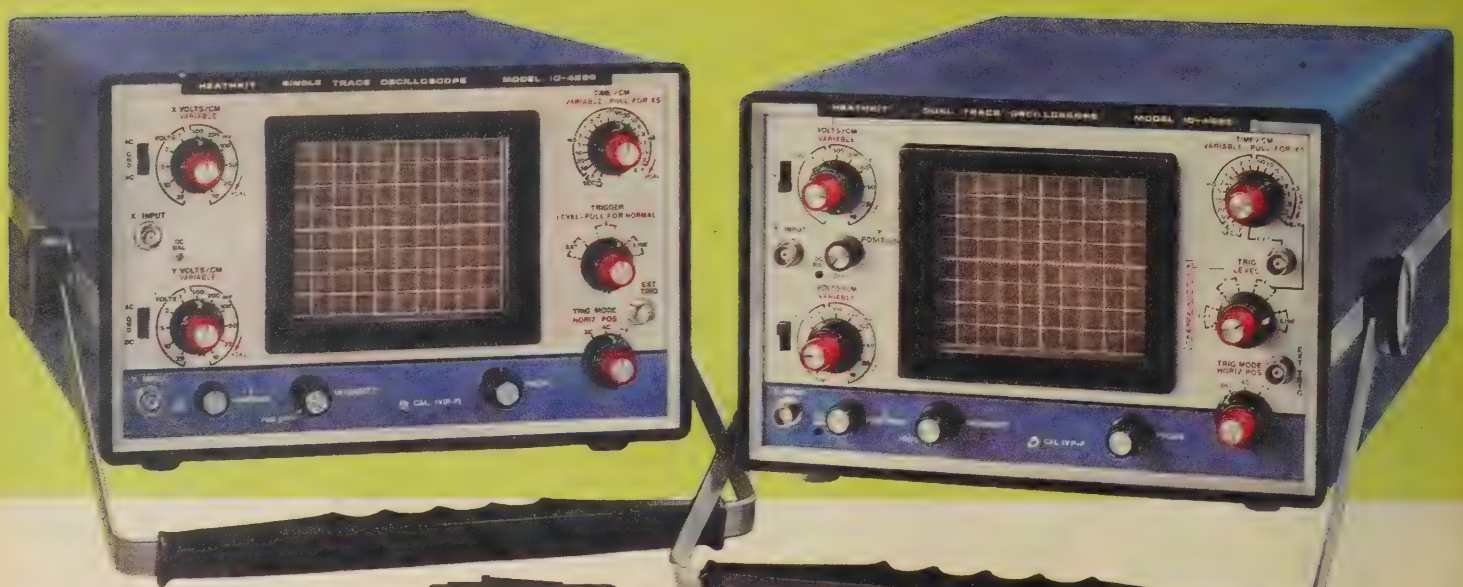
The IO-4235 also has fully regulated power supplies, variable hold off control, front panel 1-volt square wave output, more. Calibration requires a precise source of square waves such as the IG-4505 or IOA-4510-1 on page 59, and a DC voltmeter.

Kit IO-4235, Shpg. wt. 53 lbs. **869.95**

Factory assembled and tested version of above.
SO-4235, Shpg. wt. 53 lbs. **1195.00**

IO-4235 SPECIFICATIONS: Vertical. Deflection Factor: Sensitivity: 2 mV/cm to 10 V/cm, 12 steps in 1-2-5 sequence. **Variable:** continuous between steps to approx. 30 V/cm. **Accuracy:** within 3% (20°C to 30°C); 5% (10°C to 50°C), referred to 1 V/cm. **Vertical Response:** DC coupling, DC to 35 MHz (–3 dB). AC Coupling, 1 Hz to 35 MHz. **Rise Time:** 10 nS. **Overshoot,** less than 3%. **Delay Line,** allows display of at least 20 nS of pretriggered waveform. **Vertical Input: Impedance,** 1 meg shunted by 30 pF. **Maximum Input,** 400 volts peak combined AC and DC. **Connector,** BNC. **Vertical Modes:** Y_1, Y_2, Y_1 and Y_2 chopped, Y_1 and Y_2 alternate, algebraic add ($\pm Y_1 \pm Y_2$). **HORIZONTAL. Time Bases. Ranges,** 0.2 S/cm to 50 nS/cm. **Positions,** 21 steps in 1-2-5 sequence. **Variable:** continuous between ranges to approx. 0.6 S/cm. **Accuracy,** within 3% (20°C to 30°C); 5% (10°C to 40°C) referred to 1 mS/cm. **Magnifier,** X5, accurate to within 5%, 20°C to 50°C; 7%, 10°C to 40°C. **HORIZONTAL DISPLAY. Modes:** "A", "A" intensified by "B", "B" delayed by "A", X-Y and EXT X. **Delay Time Position:** 1 cm to 10 cm. **Jitter:** greater than 10,000 to 1, typically 20,000 to 1 at 5 cm. **EXTERNAL: Sensitivity:** approx. 0.1 V/cm. **Impedance:** 1 meg. **Polarity:** positive input causes right hand deflection. **Frequency Response:** DC to greater than 2 MHz (–3 dB). **Connector: BNC.TRIGGER. Source,** ± channel Y_1, ± channel Y_2, ± line, ± external. **Coupling:** AC, DC, AC Fast, TV (flip-flop). **Modes:** automatic baseline, normal, single-sweep. **Hold Off:** variable, including an "A" ends "B" position. **External Trigger: Sensitivity:** 100 mV at 50 MHz. **Input Z:** 1 megohm paralleled with 30 pF. **X-Y: Y Channel,** same as vertical. **X Channel,** same as vertical, except response limited to 2 MHz and no delay line. **Phase Shift:** less than 8° at 100 kHz. **GENERAL: CRT: Type,** 8x10 cm mesh expanded with internal graticule. **Acceleration Potential:** 10 kV regulated. **Phosphor:** P31. **Voltage Range:** 100 to 135 VAC/200-270 VAC switch selected. 85 watts. **Internal Supplies:** fully regulated. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 7¾" H x 13¾" W x 19¾" D (without handle).

See page 56 for accessory probes and cables.



8 EVENING KIT
Fast, Easy Assembly

Put a Heathkit Oscilloscope on your bench today!

Professional quality 10 MHz single trace scope offers outstanding features at a low price

$329.95

- **Brighter trace for easier-to-see displays**
- **TV trigger position**
- **Fully regulated power supplies**

Heath puts together engineering and solid state technology to come up with an unparalleled price/performance value, the IO-4555. This scope offers the features and performance that both the professional and hobbyist can appreciate and its 10 MHz bandwidth makes the IO-4555 ideal for applications in audio, digital and television servicing.

Features include X-Y capability with matched X-Y attenuation, extra-bright trace, 11 step vertical and 19 position horizontal attenuators. Vertical sensitivity may be varied in calibrated, 1-2-5 sequence from 10 mV to 20 V/cm or continuously varied, between steps, to approximately 60 volts per centimeter.

Horizontal time bases may be selected in calibrated 1-2-5 sequence from 0.2 sec/cm to 0.2 μs/cm and the X5 magnifier makes it a simple matter to observe enlarged portions of displayed waveforms. AC, DC, and TV trigger modes make application of the IO-4555 to any test configuration a simple matter.

Kit construction is straightforward, with circuit boards and wiring harnesses to simplify assembly, and Heath's performance engineered solid state circuitry insures years of trouble free performance. Put the IO-4555 on your bench today, we think you'll agree it's one of the best oscilloscope values around! Calibration requires a precise source of square waves such as IOA-4510-1 (with additional 6 volt power source) or IG-4505 on page 59.

Kit IO-4555, Shpg. wt. 29 lbs. **329.95**

IO-4555 SPECIFICATIONS: VERTICAL Sensitivity: 10 mV/cm to 20 V/cm. **Attenuator:** 11 steps in 1-2-5 sequence. **Variable attenuator:** Continuous between steps to approximately 60 V/cm. **Accuracy:** Within 3% (10°C to 40°C). **Vertical Response: DC Coupling:** DC to 10 MHz (−3 dB) at 6 cm. **AC Coupling:** 2 Hz to 10 MHz (−3 dB) at 6 cm. **Rise Time:** 35 ns. **Overshoot:** less than 5%. **Vertical Input: Impedance:** 1MΩ shunted by 38 pf. **Maximum Input:** 400 volts peak combined AC and DC. **Connector:** BNC. **HORIZONTAL: Ramp:** 0.2 sec/cm to 0.2 μs/cm. **Positions:** 19 steps in 1-2-5 sequence. **Variable time base:** Continuous between ranges to approximately 0.6 sec/cm. **Accuracy:** Within 3% (20°C to 30°C), 5% (10°C to 40°C). **Magnifier:** X5 (adds additional 2% to sweep accuracy). **Trigger: Automatic:** Adjustable over 10 divisions. **Normal:** Adjustable over 10 divisions. **Mode:** AC, DC, TV. **Y Channel:** same as vertical. **X Channel:** same as vertical, except response is limited to 1 MHz. **Phase Shift:** less than 8° at 1 MHz. **Power Requirement:** 105 to 130 VAC/210 to 260 VAC switch selected, 70 watts at 120 VAC (240 VAC). 6.9″ H x 12.8″ W x 19.3″ L (without handle). Calibration requires a precise source of square waves such as IOA-4510-1 or IG-4505 on page 66.

Lab-quality deluxe dual-trace oscilloscope features brighter trace and faster writing speed

$399.95 Kit

- **Mu-metal shield eliminates error caused by electromagnetic interference**
- **Fully-regulated high voltage supply**

The IO-4550 is an excellent choice for TV service, electronics experimentation and design. Its extra-bright trace allows easy reading even in high ambient light; its two vertical input channels have a maximum sensitivity of 10 mV/cm for accurate measurements.

Input channels are displayed, chopped or alternate, as selected by the time base switch. A trigger select switch and level control allow the time base to be precisely triggered at any point along the positive or negative slope of the signal. The digitally controlled time base provides automatic triggering, so no stability control is necessary and fewer adjustments are required.

The fully regulated high voltage power supply assures operation to specifications on standard line voltages from 100 to 270 volts. Complete mu-metal shielding helps prevent interference from stray magnetic fields.

Improved circuitry and just 4 printed circuit boards make the IO-4550 an easy kit to assemble. Calibration requires a precise source of square waves such as IOA-4510-1 (with additional 6 volt power source) or IG-4505 on page 59.

Kit IO-4550, Shpg. wt. 27 lbs. **399.95**

Factory assembled and calibrated version of above.
SO-4550. Shpg. wt. 25 lbs. **565.00**

IO/SO-4550 SPECIFICATIONS: VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. **Attenuator:** 11 steps in 1-2-5 sequence. **Variable:** Continuous between steps to approximately 60 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 10 MHz. **AC Coupling:** 2 Hz to 10 MHz. **Rise Time:** 35 ns. **Overshoot:** Less than 5%. **VERTICAL: Deflection Factor: Sensitivity:** 10 mV/cm to 20 V/cm. **Attenuator: Vertical Input: Impedance:** 1 MΩ shunted by 38 pF. **Maximum Input:** 400 V. **HORIZONTAL: Time Base: Ramp:** 0.2 s/cm to 200 ns/cm. **Positions:** 19 steps in 1-2-5 sequence. **Variable:** Continuous between ranges to approximately 0.6 s/cm. **Accuracy:** Within 3%. **Magnifier:** X5 (adds additional 2% to sweep accuracy). **External: Sensitivity:** 0.1 V/cm (approx.). **Impedance:** 100 kΩ (approx.). **Frequency Response:** DC to 1 MHz. **Connector:** BNC. **TRIGGER: Internal: Automatic:** Adjustable over 10 divisions. **Normal:** Adjustable over 10 divisions. **Slope Selection:** + or −. **External: Automatic:** Adjustable over 0.8 V. **Normal:** Adjustable over 0.8 V. **Slope Selection:** + or −. **Impedance:** 1MΩ shunted by 40 pF. **Connector:** BNC. **X-Y: Y Channel:** Same as vertical. **X Channel:** Same as vertical except response is limited to 1 MHz. **Phase Shift:** Less than 8° @ 100 kHz. **Power: Voltage Range:** 100-135 VAC/200-275 VAC switch selected, 70 watts at 120 VAC (240 VAC). 6.9″ H x 12.9″ W x 19.3″ L (without handle).

See page 56 for probes and accessories.



Lab Quality Oscilloscope — Dual-Trace, DC-15 MHz with vertical delay lines

$629.95 Kit

Vertical input sensitivity of 1 mV/cm is provided over the entire bandwidth. With a x10 probe waveforms to 10 mV can be read — not the 50 or 100 mV found on other scopes.

The IO-4510 will typically trigger on signals up to 45 MHz and is guaranteed to 30 MHz with only 1 cm deflection. And, there is no stability control needed with the digitally controlled triggering circuits. In the automatic mode, a reference baseline is generated even when the trigger signal is absent. Complete triggering controls are provided with choice of AC, ACF or DC coupling. The ACF (coupling) mode is provided to reject low-frequency components of the trigger waveform for accurate scope triggering. A trigger select allows triggering at any point on the vertical signal, or from either channel Y_1 or Y_2.

You have a choice of normal or automatic sweep, and can use any one of 20 time bases from 0.2 sec/cm to 0.1 μsec/cm. Any sweep speed can be magnified five times. You can also select an externally generated horizontal signal.

Internal delay lines insure the start of a horizontal sweep prior to the beginning of the vertical signal. The IO-4510 guarantees display of at least 20 nanoseconds of the pre-triggered waveform, insuring complete waveform display.

Fully regulated power supplies provide stable voltages regardless of the varying line voltage conditions. The 4 kV regulated post-acceleration potential of the CRT insures display brightness. IO-4510 calibration requires a precise source of square waves such as IOA-4510-1 or IG-4505 on page 59.

Kit IO-4510, Shpg. wt. 36 lbs. **629.95**

SO-4510, factory assembled & calibrated, Shpg. wt. 28 lbs. **810.00**

IO/SO-4510 SPECIFICATIONS — VERTICAL: Deflection Factor: Sensitivity: 1 mV/cm to 5 V/cm in 12 steps. **Variable:** Continuous between steps to approx. 15 V/cm. **Accuracy:** Within 3% (20°C to 30°C), 5% (10°C to 40°C) referenced to 0.2 V/cm @ 25°C. **Vertical Response: DC Coupling:** DC to 15 MHz (–3 dB). **AC Coupling:** 2 Hz to 15 MHz (–3 dB). **Rise Time:** 24 nanoseconds. **Overshoot:** Less than 3%. **Delay Line:** Allows display of at least 20 ns of pretriggered waveform. **Vertical Input: Impedance:** 1 megohm shunted by approx. 40 pF. **Maximum Input:** 400 volts peak combined AC & DC. **Vertical Modes: Single:** Y_1 or Y_2 selected by vertical position controls. **Dual:** Chopped (200 kHz) or alternate automatically selected by Time Base switch. **HORIZONTAL: Time Base: Ramp:** 0.2 sec/cm to 0.1 μsec/cm in 20 steps. **Variable: Continuous** between ranges to approx. 0.6 sec/cm. **Accuracy:** Within 3% (20°C to 30°C), 5% (10°C to 40°C) referenced to 1 ms/cm @ 25°C. **Magnifier:** X5 (adds additional 2% to sweep accuracy). **External: Sensitivity:** 0.2 V/cm (approx.) **Impedance:** 200 kilohms (approx.). **Frequency Response:** DC to 1 MHz (–3 dB). **TRIGGER: Internal: Automatic:** Zero crossing ±0.5 volts. **Normal:** Adjustable over 8 divisions. **Slope Selection:** + or –. **External: Automatic: Zero crossing** ±0.2 volts. **Normal:** Adjustable over ±5 volts. **Slope Selection:** + or –. **Impedance:** 1 megohm shunted by approx. 30 pF. **X-Y: Y Channel:** Same as Vertical. **X Channel:** Same as Vertical, except response limited to 1 MHz and no delay line. **X-Y Phase Shift:** Less than 3° @ 100 kHz. **GENERAL: CRT: Type:** 6 x 10 cm spiral PDA. **Graticule:** 6 x 10 cm illuminated, variable by front panel control. **Power: Voltage Range:** 100 to 140 VAC/200 to 280 VAC, switch selected, 75 watts. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 6.4″ H x 12.9″ W x 19.3″ D (handle extended). **Weight:** 24 lbs.



DC to 5 MHz Oscilloscope Offers Dual-Trace Versatility at a Single-Trace price!

$259.95 Kit

The new Heathkit IO-4205 brings you controls and features not usually found in other scopes in this price range, plus dual-trace versatility! The dual-trace feature is essential for the sophisticated servicing required by many of today's modern electronic devices. It lets you compare two signals simultaneously for input-output comparisons, checking phase relationships and other timing functions. This dual-trace feature combined with the IO-4205's DC to 5 MHz bandwidth and excellent vertical input sensitivity of 10 mV/cm let you use it for nearly all waveform applications.

A stable triggering circuit is used for solid waveform displays (not the recurrent type sweep usually found on other scopes in this price range). Trigger controls include selection of normal or automatic modes, switch controlled AC or DC coupling and front panel input of external triggering signals. A special TV position on the trigger selector control allows low frequencies to pass while rejecting the high frequencies, so the IO-4205 will easily trigger on the vertical component of a complex TV signal.

Any one of seven calibrated time bases, from 200 mS/cm to 0.2 μS/cm can be selected by the time/cm switch. A variable control provides for precise settings between steps. The horizontal amplifier accepts external inputs from DC to 100 kHz.

The vertical input sensitivity is 10 mV/cm and eleven calibrated attenuator positions, up to 20 V/cm, will accommodate a wide range of input signals. A variable gain control provides accurate control between settings.

Accurate measurements can be easily made on the bright, easy-to-read 8 x 10 cm CRT screen. The lightweight and durable cabinet combines professional appearance with easy-to-carry portability. The flush-mounted-handle allows stacking to avoid an instrument-crowded bench.

The fully regulated power supply supplies accurate voltage and current even under varying line and load conditions. Partial mu-metal shielding helps eliminate display errors caused by stray magnetic fields. The IO-4205 operates from 110-130 VAC, or 220-260 VAC, 50/60 Hz. Power consumption is a low 50 watts.

The Dual-Trace Capability of the IO-4205 makes it ideal for any comparison or timing functions on solid-state digital equipment. Its easy-to-operate controls and front panel inputs make it one of the most versatile oscilloscopes you'll find anywhere. Shop and compare. We don't think you'll find an oscilloscope with the value, features and performance capabilities of the dual-trace IO-4205 at anywhere near this price!

Kit IO-4205, Shpg. wt. 29 lbs. **259.95**

SO-4205, Assembled and Tested. 29 lbs. **450.00**

IO-4205 SPECIFICATIONS: VERTICAL: Bandwidth: DC to 5 MHz, –3 dB. **Sensitivity:** 10 mV/cm. **Attenuator:** 1-2-5 sequence, calibrated and variable. **Rise Time:** 70 nS. **Overshoot:** 5% at 1 kHz. **Impedance:** 1 megohm/38 pF. **SWEEP: Type:** Triggered. **Range:** 200 mS to 0.2 μS in 7 steps, plus variable. **Trigger Source:** Y_1/Y_2 External/Line. **Trigger Modes:** AC/DC/TV/+/— Slope/Auto/Normal. **HORIZONTAL: Sensitivity:** 0.1 V/cm. **Bandwidth:** DC to 1 MHz. **Impedance:** 1 megohm/50 pF. **External Horizontal Input:** X1 and X10 attenuator and variable. **GENERAL: CRT:** 5DEP31F, 8 x 10 cm viewing area, blue-green medium persistance phosphor, 5″ round flat-face tube. **Accelerating Potential:** approximately 1.6 kV. **Graticule:** screened, 8 x 10 centimeters. **Power Requirement:** 110-130 VAC, or 220-260 VAC, 50/60 Hz, 50 watts. **Dimensions:** 13″ W x 8″ H x 17″ D.

See page 56 for accessory probes and cables.



CHOOSE THE HEATHKIT COMPUTER SYSTEM THAT MEETS YOUR NEEDS!

Our H11 16-Bit Computer is the one you want to move and manipulate data with amazing speed! It can suit your needs for business applications such as payroll systems, inventory control, mailing lists, any function that requires large amounts of data control.

Our H8 8-bit computer is the choice for hobbyists and small businesses. While it does not operate as fast as the 16-bit H11, its capabilities are quite adequate for all but the most sophisticated uses.

Here's how to get a big 5% System Discount on Heathkit Computers and Peripherals

Simply choose the H8 or H11A and one major peripheral plus any I/O devices and accessories you need for a complete custom computer system. Then you can deduct 5% from the total price (excluding shipping and handling charges). It's the ideal way to get the exact computer system you need and save money too!



Heathkit "Total System"

The value standard in personal computing systems featuring two powerful computers with better software, full documentation and service support from the Heath Company.

Heathkit computers and peripherals are designed to give the computer user, whether beginner or advanced, the most value and versatility for the money. Each unit, computer or peripheral, is an advanced product offering substantial benefits over competitive products. And now, with floppy disk storage available for the H8 and H11/H11A, these Heathkit computer systems rank with the finest computer products available anywhere at any price!

Personal computing is the exciting new hobby that's sweeping the country. Using a computer for games, educational and practical applications has proven itself to be stimulating, creative, educational and satisfying. Programming a computer to do things for you is not only interesting and challenging, it's FUN!

What's more, your personal computer doesn't have to be just a game-player. There are literally hundreds of applications you can program it for — checkbook balancing, keeping track of savings, charting stocks, budget planning, taxes, etc. — use it in your home for awhile and you'll be amazed at what it can do. Any data storage and retrieval application can be done faster, more accurately and more efficiently when it's done by a computer.

The business applications of computers are obvious too — payroll accounts, sales records, inventory control, accounting and bookkeeping operations, etc. Computers help you increase efficiency, streamline your operation, and save you time AND money by doing many time-consuming routine procedures with lightning speed.

Owning and using a computer can also be an exciting learning experience. You learn how to solve problems, how to program, and simply how computers work. Knowledge of this kind can really pay off because computers are being used everywhere and their application is



Personal Computers–the ones you can start with and stay with!

becoming even more widespread as low-cost mini- and microcomputers are incorporated into new devices.

Using Heath computer equipment to start and pursue your computer hobby is the really smart thing to do. We have everything you need to go from learning programming (our Microprocessor program and computer trainer, pages 88-89) to a full 16-bit machine with complete peripherals. The computer products are offered either fully assembled and tested or in money-saving, easy-to-build kit form. And every Heathkit computer product is backed by the resources of Heath Company — full service facilities, comprehensive step-by-step instruction manuals and complete technical consultation.

We're confident you'll find the Heathkit computer line one of the most intelligent, sensibly developed and complete product lines available today. It offers you total versatility and expansion capability to go wherever your imagination and computing prowess take you. And, in the Heathkit tradition, it offers the best price/performance and reliability combination you'll find anywhere.

Heath User's Group

HUG®—The Heath User's Group Keeps You in Touch and Up to Date

The Heath User's Group puts you in contact with other Heath computer owners and keeps you up to date on Heath products. There's an informative newsletter, a complete program library and exchange, new product information and hardware/software ideas. Membership in HUG is a useful way to get the maximum benefit from your Heathkit Computer System. Here's what you get:

- **1 year subscription to the quarterly newsletter**
- **Software library allowing you to submit programs and obtain programs submitted by others. There is a small fee for program duplication.**
- **An attractive 3-ring binder to hold newsletters, software documentation and other materials.**
- **Program submission forms** • **Software library catalog**

Dues are $14.00 per year, and must be paid in full (no bank cards or Heath revolving charge). Full details are included with every Heathkit computer product. H11 owners are also eligible for membership in DECUS, see page 70 for details, or phone (616) 982-3463.



Texas Instruments TI Programmer — A Great Calculator for Computer Hobbyists

- **Provides conversions between octal, decimal and hexadecimal number systems.**
- **Special logic operations for mini and microcomputer applications.**
- **Versatile 3-key independent memory and 15 levels of parentheses for complex problems.**
- **Performs standard calculator functions too.**

The TI Programmer is a hand-held calculator designed for people who work with computers. It provides fast and accurate conversions between octal, decimal and hexadecimal number systems to eliminate bulky conversion tables or longhand methods. It performs arithmetic operations in any of the three number systems, and it features logic operations (AND, OR, EXCLUSIVE OR, SHIFT) for flexibility in programming. Has "two's complement" arithmetic in octal and hexadecimal modes; three-key memory that lets you store, sum to memory or recall numbers; constant mode to simplify repetitive calculations. The easy-to-read 8-digit LED display has indicators for octal and hex modes. With rechargeable battery and AC adapter/charger. 3" W x 5½" H x 1¼" D. The TI Programmer is a useful programming and debugging aid for any computer application. It's lightweight and completely portable so you can take it with you anywhere. Fully assembled and factory tested.

PC-1, Shpg. wt. 2 lbs. **59.95**



THE HEATHKIT H8 PERSONAL COMPUTER

$379.00 Kit

Requires at least one H8-1 Memory Board to operate

The powerful, easy-to-use personal computer with the "intelligent" front panel featuring octal entry keyboard and digital readout — plus a fully wired and tested 8080A CPU — one of the most popular microprocessors available today!

6 EVENING KIT
Fast, Easy Assembly

- **Built-in extended ROM monitor controls front panel program**
- **Heavy-duty power supply handles to 65K memory**
- **Exclusive Heath 50-line fully-buffered bus has positions for up to 9 plug-in circuit boards**
- **Built-in speaker provides audible feedback for keyboard entry**
- **Convection cooled power supply — no fan needed**

The Heathkit H8 computer is the ideal choice for personal or hobby computing. Its combination of unique features and low cost make it an outstanding value among general-purpose computers, and, thanks to Heath's exclusive design, it is one of the most versatile. It is easy-to-build, and simple to operate. And while it is an ideal entry level machine, it provides the expansion capability that allows you to build it into a powerful general-purpose computer system. The H8 lets you start small and increase its power and versatility as you increase your programming prowess.



The H8 is complete with superior Heathkit documentation to get you up and running fast and easy. Optional software is available in cassette form.

The H8, with the addition of 4K of memory, makes an ideal computer trainer. Its 16-key front panel keyboard provides octal data entry and gives you direct access to registers and memory, one-button program load and dump, and input/output keys for direct communication with any port. Its 9-digit octal readout provides far more information than conventional computers — memory, registers and I/O port displays are updated even while programs are running for direct monitoring of program activity.

With the addition of more memory peripherals and interfaces, the H8 can become even more powerful and versatile, allowing you to write highly sophisticated and practical programs. And because the H8 is based on the world-famous 8080A CPU, the amount of existing software (programs) from both Heath and other sources makes it one of the most immediately practical computers you can own.

See the following pages for complete descriptions of H8 peripherals and accessories, and our exciting new Floppy Disk System.

The H8's optional software is supplied in 1200 baud audio cassette form to get you up and running fast. Benton Harbor BASIC, HASL-8 2-pass absolute assembler, TED-8 line-oriented text editor, and BUG-8 terminal console debug program let you begin communicating with the H8 right away. See next page for a rundown of this powerful software.

Other features of the H8 include: exclusive Heath-designed 50-pin fully buffered bus; mother board with positions for up to 9 plug-in circuit boards that accept the CPU, front panel memory, I/O and other accessory cards; built-in convection cooled power supply; built-in speaker for audible feedback and special effects; front panel status lights and more. The CPU board is fully wired and tested for easy system setup and kit assembly. It features the 8080A chip, clock, systems controller, ROM monitor and full bus buffering. Seven vectored interrupts are available for quick response to I/O requests.

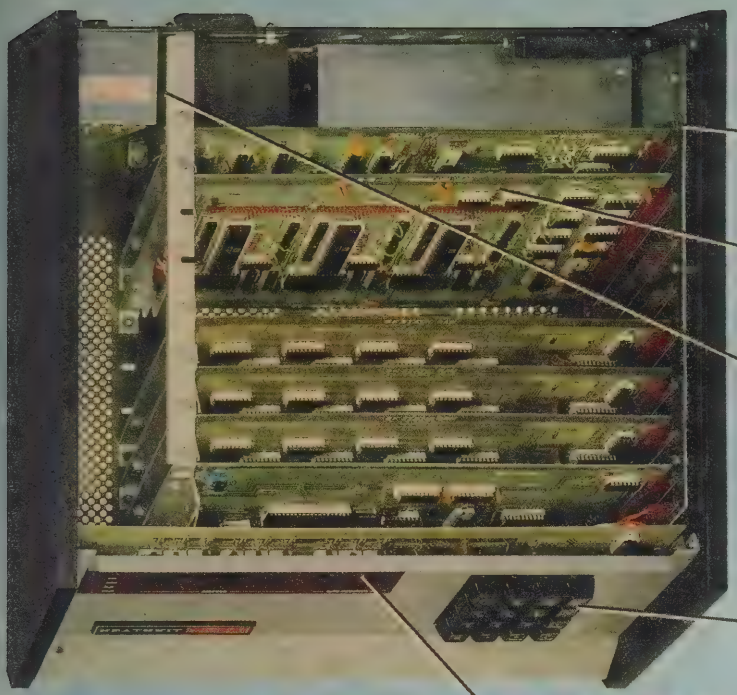
The H8 is housed in a heavy-duty metal cabinet with modern, high-impact structural foam side panels. 16¼" W x 6½" H x 17" D. Switch-selected 120/240 VAC, 50/60 Hz. **Requires at least one H8-1 memory board to operate.**



Software is available in audio cassette form and is also available on diskettes.

Order the H8, software and accessories from page 68.

FOR FASTEST SERVICE — USE THE HEATHKIT HOTLINE!
(616) 982-3411 day or night



Here's the "inside" story on the H8 Computer—just look at these unique features!

The unique Heath-designed 50-pin bus is implemented on a heavy-duty printed circuit board with copper-foil bus lines. The 9-position mother board is complete with all connectors. The bus lines are fully buffered to eliminate noise and crosstalk, and "glitch-free" to prevent timing problems.

Modular circuit boards slide into the H8 mainframe for easy memory and I/O expansion and easy access for servicing. The boards are in a semi-vertical position with unconfined heat sinks to enhance convection cooling and improve heat dissipation.

Heavy-duty power supply, rugged steel chassis and securely mounted and braced circuit boards make the H8 a truly reliable and long-life machine.



Memory Display



Register Display



I/O Port Display



The H8 Computer "tells" you about operations

The H8's "intelligent" front panel provides the most informative display of any personal computer we've seen. All displays are continuously updated even while your program is executing, giving you instant access to registers and memory for direct monitoring of program activity. The memory display shows memory location and contents using 6 digits for address and 3 digits for data. The register display shows CPU-register contents using 6 digits for data and 2 digits for register identification. The I/O port display shows I/O port data and location using 3 digits for data and 3 digits for port address.

One of the most useful front panels available anywhere!

The unique front panel keyboard makes the H8 one of the most powerful and sophisticated low-cost general-purpose computers available. It provides direct access to registers and memory even while programs are running; one-button load and dump for fast, easy system startup; a single instruction key for "stepping" through programs for easy debugging, program evaluation and learning; and input/output keys for communicating directly with any port.

This widely-praised Software for the Heathkit H8 makes it "ready" for your programming!

The software for the H8 computer has a number of features that make it easier to use and more practical than other systems. Automatic "command completion" simplifies typing; dynamic syntax checking instantly alerts you to errors and a special user configuration lets you personalize your system. H8 software is memory efficient to give you more computing power for your memory dollar, has modular design for easy expansion, and is thoroughly documented for easy programming and maximum effectiveness.

The System Software for the H8 includes: BENTON HARBOR BASIC. This conversational programming language uses simple English statements and familiar algebraic equations to perform operations and solve problems. It is compact enough to run in the Heathkit H8 with limited memory, yet powerful enough to satisfy most problem-solving requirements. Requires a minimum of 8K memory. Extended Benton Harbor BASIC is also available, order from page 68.

ASSEMBLY LANGUAGE (HASL-8). This two-pass absolute assembler lets you create source programs using letters, numbers and symbols to generate efficient machine language code. It assembles the source program into a listing and an object program in binary format executable by the H8. A minimum of 8K memory is required.

TEXT EDITOR (TED-8). Converts the H8 computer and terminal into a powerful typewriter for generating text and editing. It prepares the source code for H8 assembly language and can be used to prepare reports, write letters and edit manuscripts. Requires a minimum of 8K memory.

CONSOLE DEBUGGER (BUG-8). This enhanced and extended version of the front panel monitor allows entry and debugging of user machine language programs via an external terminal. It features single or multiple stepping through programs, breakpointing, load and dump from tape storage. It requires a minimum of 4K memory plus user program.

The software is supplied in 1200 baud audio cassette form.

H8-18, Shpg. wt. 11 lbs. **20.00**

H8 Accessories, Software and Manual Set

Order your H8 Computer and Accessories from the listings below. See previous pages for a complete description of the H8. **Kit H8,** Shpg. wt. 30 lbs. **379.00**

WH8, Assembled and tested version of H8. Shpg. wt. 30 lbs. **475.00**

WH8-16 16K Wired Memory Board for H8. Lets you expand the H8 to the full capacity of the 8080A CPU (65K). **WH8-16,** Fully assembled & tested. 2 lbs. **395.00**

H8-1 8K Memory Board. 8Kx8 memory card supplied with 4K memory, plugs directly into H8 bus. Features maximum storage capacity of 8192 8-bit words. Uses modern 4Kx1 static memory IC chips for easy assembly and service. Access time, less than 450 nS. With on-board regulators, heat sinks and full buffering. Expandable to 8K memory with H8-3 chip set below.
Kit H8-1, Shpg. wt. 2 lbs. **125.00**

H8-3 Chip Set. Kit of eight 4K static memory IC's. Expands H8-1 to full 8K storage. With sockets.
Kit H8-3, Shpg. wt. 1 lb. **85.00**

NEW! WH8-8 Assembled and Tested 8K Memory Board. Shpg. wt. 2 lbs. **250.00**

H8-2 Parallel Interface. Connects H8 to any parallel device such as a paper tape reader/punch. Has three independent parallel ports, each with 8 bits input and 8 bits output and universal handshaking capability. Compatible with all Heath software.
Kit H8-2, Shpg. wt. 3 lbs. **150.00**

WH8-4, Four-Port Assembled and Tested Serial Interface Board. Provides additional serial I/O capability for the H8. Connect other serial devices such as the WH14 line printer (page 74). 2 lbs. **250.00**

NEW! WH8-41 Adapter Cable. Provides EIA industry-standard electrical and mechanical interface between H8-4 and other peripherals. For use with H8 computer. Assembled and tested.
WH8-41, Shpg. wt. 1 lb. **15.00**

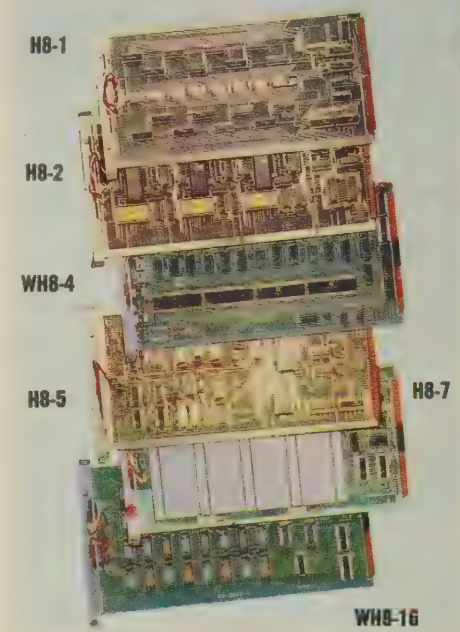
H8-5 Serial I/O and Cassette Interface. Connects the H8 to serial devices such as the H9 video terminal (page 74) or the H36 DEC Writer II (page 75). Features jumper selectable data rate from 110 to 9600 baud, plus common input/output interfaces including 20 mA current loop and EIA RS-232C compatible levels. The cassette recorder interface permits use with the Heathkit ECP-3801, page 75. Uses the popular Byte/Manchester recording format but runs at 1200 baud. Has control lines for remote start and stop of two cassette units to allow separate record and playback capability. LED test circuit.
Kit H8-5, Shpg. wt. 3 lbs. **125.00**
WH8-5, Assembled and Tested version of above. 2 lbs. **150.00**

NEW! WH8-51 Adapter Cable. Provides EIA industry-standard electrical and mechanical interface between H8-5 and other peripherals. For use with H8 computer. Assembled and tested. **WH8-51,** Shpg. wt. 1 lb. **15.00**

NOTE: Proper operation of the H8-5 is assured only if you use the Heath ECP-3801 cassette player/recorder and Heath-recommended recording tape (ECP-3802, page 75). Heath is not responsible for improper operation associated with other cassette units.

NEW! H8-7 Breadboard Card. Lets you custom design your own circuits for additional interfacing, creating your own memory boards, etc. Make the H8 even more versatile. Includes H8 bus interface and address decode.
Kit H8-7, Shpg. wt. 2 lbs. **90.00**





Extended Benton Harbor BASIC. An enhanced version of BASIC with strings and files. It provides even faster operation and includes character strings, additional convenience commands and math functions, dynamic storage allocation, access to real time clock, keyboard interrupt processing, expanded error messages and recovery ability, LED display control and key pad support. Minimum of 12K memory is required to run this BASIC, 16K is preferred if full use is to be made of its capabilities. Supports WH-14 line printer and WH8-4 Interface Board. Supplied in 1200 baud audio cassette format.
HC8-14, Shpg. wt. 2 lbs. **20.00**

HM-800 Manual Set. Here's your chance to LOOK before you buy, and with no risk! Includes complete assembly and operations manuals for the H8, H8-1, H8-2, H8-3, H8-5, H9 and H10. The complete H8 software documentation is also included! All in a handsome 3-ring binder. You can deduct the price of the manual set when you buy your H8.
HM-800, Shpg. wt. 11 lbs. **25.00**
NOTE: Individual product manuals are included with each kit

Cassette Software for the H8

BIORHYTHM. Plots sinusoidal curves of your physical, emotional, and intellectual characteristics over a given time period. The biorhythm program will show you your ups and downs and will tell you your good and bad days. While this program is not a game, it is an entertaining activity that you will truly enjoy. The program runs under extended BASIC and requires 16K of RAM. **PA-82,** 1 lb. **10.00**

SPACE WAR. This is perhaps the most popular computer game available. It allows you to guide, control and command the Starship Enterprise in its travels through the galaxy, fighting Klingons and solving problems. A truly challenging and entertaining computer game. Requires 24K RAM. **PA-83,** Shpg. wt. 1 lb. **10.00**

GAME SET #1. This software package lets you play 8 popular computer games. These games include Craps, Orbit, Tic Tac Toe, Nim, Hexapawn, Hangman, Hamrabi, and Derby. 8K RAM or more is required. These games will provide hours of entertainment for you and your family. **PA-84,** Shpg. wt. 1 lb. **10.00**

NOTE: Above applications software is in 1200 baud audio cassette form.



Deluxe H8 System with CRT and Floppy Disk

Choose the H8 System you need to meet your particular computing requirements and deduct a big 5% from the total price of the individual items

Now you can select the H8 system that meets your particular requirements and get a big system discount. Simply choose the H8, any major peripheral INCLUDING the H17 floppy disk, plus the software, memory and accessories you need. Then deduct 5% from the total price (excluding shipping and handling charges). It's the easy, efficient way to get your complete computer system and save money too!

The H17 Floppy Disk System Makes Your H8 a Real "Pro"!



Shown with optional second drive **$575.00** Kit with single drive

The H17 Floppy Disk System is the peripheral that will make your H8 a true professional system! You'll be able to, load programs in seconds instead of minutes, update files and data virtually instantly, and have storage and program access that's far faster and more efficient than paper tape or cassette storage!

The new H17 floppy disk system is the one you've been waiting for. It makes the H8 a thoroughly sophisticated, completely versatile computer that gives you the storage and programming capacity you NEED for virtually any application! With this floppy disk system, you can load programs instantly so you're up and running fast; you can store literally hundreds of programs on a single disk so you have lots of storage space and immediate access to all your programs; and you can update files instantly and efficiently to save time. Floppy disk storage is far more versatile and reliable than paper tape or cassette storage systems; it truly makes the H8 a "total versatility" computer system.

Designed exclusively for use with the H8, the H17 has been "systems" engineered to deliver a fully assembled package including: a disk drive, and interface disk/controller circuit board, and built in power supply. The H17 is one of the few disk drive systems on the market to INCLUDE the interface/disk controller circuit board at no extra charge! The controller circuit board plugs directly into the H8's mainframe and with the addition of the optional second drive you'll have optimum dual-drive versatility.

The storage media for the H17 is the standard, hard-sectored 40-track diskette. Measuring just 5.25" in diameter, each disk offers access to better than 102K bytes of available program and data storage area.

The drive system used in the H17 is the famous WANGCO Model 82, a performance-proven drive providing accurate high-speed data access. Specifications of this drive include a conservative 30 mS maximum track-step time and typical random sector access times of less than 250 mS. These figures are considerably better than most equivalent competitive drives.

The WANGCO 82 drive system is supplied fully assembled and tested. It's backed by extremely reliable mechanical and electrical operation. To use the H17 effectively with the H8 computer requires at least 16K of RAM for the H8 and H8-17 operating systems software, sold separately below. The H17 includes a single blank diskette.

Kit H17, Shpg. wt. 27 lbs. **575.00**

WH17, Factory assembled and tested. Shpg. wt. 28 lbs. **675.00**

Optional Second Drive. Adds dual-drive versatility to H17 for a total of over 204K bytes of available program and data storage area.

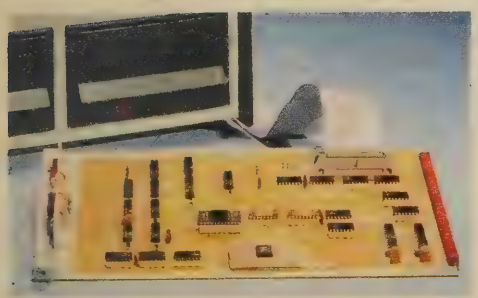
H17-1, Shpg. wt. 5 lbs. **295.00**

Package of 5 Blank Diskettes.

H17-2, Shpg. wt. 1 lb. ..... **each 25.00**



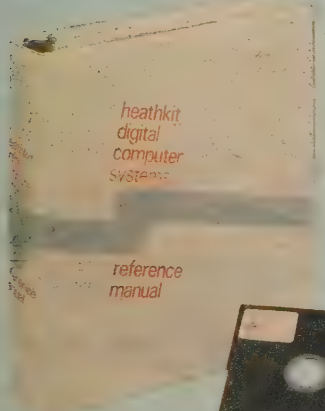
Rugged and Reliable Fully Assembled WANGCO model 82 Disk Drive Unit offers Totally Reliable and Dependable Mechanical and Electrical Operation for Years of Trouble-Free Service.



The H17 INCLUDES the Interface/Disk Controller Circuit Board — An Extra Cost Option with Most Other Units.

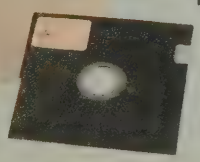
NOTE: The H8 Computer Requires at Least 16K of RAM to Use the H17 Floppy Disk and Its Operating System.

H17 SPECIFICATIONS: Storage Media: 5.25" hard-sectored 40-track diskette. **Drive Type:** WANGCO Model 82. **Track Seek Time:** 30 ms maximum. **Random Sector Access Time:** Less than 250 milliseconds. **Power Requirement:** 120/240 VAC, 50/60 Hz. 75 watts. **Dimensions:** 13.5" W x 6.25" H x 13.5" D.



The unique diagnostic supplied with the H17 includes: a drive speed test to check floppy rpm; a general test to verify total system operation including R/W; a media test to examine disk for defects; and a seek time test to vary the seek time to determine the most reliable speed and efficient operation.

Complete Operating Instructions Are Included in a Handsome and Rugged Three-Ring Binder



Expanded, Hard-Sectored 40-Track Diskette Contains All Software Programs

Here's the complete Operating Systems Software for the H17 Floppy Disk System

The Operating Systems Software for the H17 Floppy Disk System includes a diskette containing the standard H8 software plus a unique diagnostic for optimum system setup and evaluation. This software includes extended Benton Harbor BASIC with strings and files; a 2-pass absolute assembler that generates efficient machine language codes; a text editor to prepare source code for BASIC and other languages; a console debugger for easy debugging of user machine language programs via an external terminal; and a full set of disk utility programs for convenient file manipulation. Special features of this operating software include Dynamic File Allocation which automatically keeps free space available to permit unlimited file size and prevent squeezing of disks. It also prevents estimating or predeclaring file size before writing to provide more efficient use of file space. Special facilities support running and backup of single-drive configurations to permit copying and transferring between disks even with a single-drive system. Device independence permits direct communication between any program and any device for added flexibility. A file utility program allows two kinds of wild cards for fast, easy bulk manipulation of files. The software is supplied on a standard diskette and a comprehensive operations and instruction manual.

H8-17, Shpg. wt. 12 lbs. **100.00**



Now Available Fully Wired or in Kit Form

new Heathkit/DEC H11A 16-Bit Computer

$1095.00

The new H11A uses the new LSI-11/2 family of microcomputer products to bring you a 16-bit machine of almost incredible power and versatility. New "half-size" CPU board gives you more space for memory and I/O to increase power and performance!

The New Heath/DEC H11A combines the advanced, performance-proven hardware and software of the state-of-the-art LSI-11/2 with Heath's expertise in kit design and documentation to bring you a personal computer of almost incredible power and versatility.

What is The H11A?

The H11A is Heath's top-of-the-line computer.

It is designed for the serious computer hobbyist. It is the world's most powerful hobby computer. It offers the advance hobbyist the power and potential to implement more sophisticated applications. Most hobbyists discover that their problem solving and programming capabilities grow quickly as they learn more about the computer. Before long, many advanced hobbyists simply run out of computing power. Their small low cost system may be inadequate to produce the performance required by some advance applications. The H11A is the computer that meets the demand for superior performance in hobby applications. When you buy the H11A you buy virtually unlimited potential.



The H11A is complete with superior Heathkit documentation.

The H11A is also useful in education, industry and small business. Its computing power and expansion capability make it ideal for such applications. The H11A is for those who want commercial performance at hobby prices.

The Heathkit H11A is virtually identical to DEC's famous PDP-11/03 microcomputer. It features the advanced new "half-size" LSI-11/2 (KD11-HA) microcomputer. The performance of the H11A is identical to DEC's PDP-11/03 but at a fraction of the cost. This new half-size configuration allows you to put more computing power and versatility into the H11A cabinet by providing an extra plug-in slot for additional memory or I/O interface. See next page for a complete description of the KD11-HA board.

The 16 Bit vs. 8 Bit Issue

To the first time computer buyer and to many advanced users, the question of the value of a 16 bit computer over an 8 bit computer frequently arises. Should you purchase an H11A or an H8? Your choice of a 16 bit or 8 bit computer depends upon your needs. If you are a beginner with simple applications, the H8 is your best choice. If you are an advanced hobbyist or professional with demanding applications, the H11A is clearly your best choice. The H11A has adequate computer power not only for simple applications but for the more complex and sophisticated jobs that you will be tackling later. It is also the best choice for commercial and industrial applications. In buying the H11A, you are purchasing ultimate immediate performance and future potential.

The H11A Mainframe

A basic H11A computer is supplied with an attractively styled cabinet, a heavy duty power supply, a backplane incorporating DEC's state-of-the-art LSI-11/2 bus and the powerful new KD11-HA CPU board fully assembled and tested. This board contains the LSI-11/2 computer. To this mainframe you will need to add the various memory and I/O accessories that will configure the H11A to your particular specifications. The H11A backplane with the KD11-HA board in place contains 7 additional plug-in slots for memory and I/O cards. Complete systems software is optionally available in paper tape and floppy disk form. Rugged metal cabinet with high-impact plastic sides measures 19" W x 6½" H x 17" D. For 110/220 VAC, 50/60 Hz.

Kit H11A, Shpg. wt. 43 lbs. **1095.00**

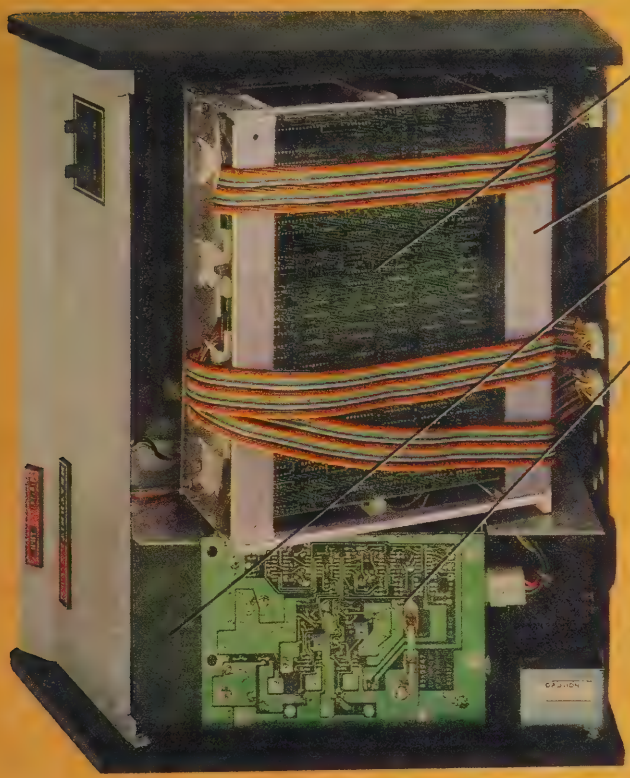
WH11A, Factory Assembled and Tested version of above.
Shpg. wt. 43 lbs. **1850.00**

Order software, memory expansion modules and interface accessories from page 72.

See page 72 for Software License Agreement

NOTE: H11A and WH11A owners are eligible for membership in the Digital Equipment Computer User's Society (DECUS). This organization provides useful symposia, newsletters, program library and other useful information to help you get the most from your LSI-11 computer.

Here's the "Inside Story" on the H11A!



Card cage with backplane accommodates up to eleven accessory cards in addition to LSI-11/2. The card cage swings up for easy access and service even while the H11A is operating. Accessory boards slide directly into card guides with all connectors supplied.

Rugged steel chassis and extra-thick backplane with heavy, solid connectors for added strength and years of superior performance.

Built-in quiet-running fan provides efficient cooling and prevents heat buildup.

Compact, efficient switching power supply uses less power to operate and generates less heat than conventional supplies. Overvoltage and overcurrent/short circuit protection, along with automatic power-up and power-down sequencing, provide high reliability and long life operation.

Top to Bottom
16K Memory Board
32K Memory Board
KD11HA Microcomputer Board

Top to Bottom
4K Memory Board
Parallel Interface Board
Serial Interface Board



Fully Assembled and Tested KD11-HA Circuit Board

The "heart" of the new H11A is the 16-bit microcomputer module, the KD11-HA. It's only half the size of the LSI-11 (KD-11F), but gives you better features and performance, and provides even more flexibility when you configure your system. There is no on-board memory so you can match your RAM/ROM requirements to your particular needs. And full compatibility with the LSI-11 family means you can "mix or match" by combining components from both LSI-11 and LSI-11/2 families.

Features of the KD11-HA include: PDP-11/34 instruction set, raw computer speed of 380 nS microcycle time, resident firmware debugging (ODT) and ASCII console routines, integer and floating point arithmetic instructions, and single and double operand instructions. The LSI-11/2 gives you the power and flexibility you need for virtually ANY system configuration you want!

Optional H11A Paper Tape Software includes:

ED-11. Assists you in the creation and modification of ASCII source tapes, also used to write assembly language programs and for general text editing or word processing functions.

PAL-11S. Relocatable assembler converts ASCII source tapes into relocatable binary modules. This lets you create programs in small, modular segments for easier coding and debugging.

LINK-11S. Link editor which links the modules created by the PAL-11S into a load module ready for execution on the H11A. The module is loaded into the H11A via the Absolute Loader.

Absolute Loader. Loads tapes into the H11A memory for execution.

ODT-11X. Lets you debug the programs which you have created. Permits modifying and controlling program execution "on the fly".

IOX. I/O executive program permits I/O programming without developing device-driving programs. Links to your programs using the LINK-11S. For use with high speed paper tape reader/punch and line printer.

DUMP-AB and DUMP-R. Lets you dump binary contents of memory to the paper tape punch.

BASIC. DEC's powerful version of standard Dartmouth BASIC interpreter uses English-type statements and mathematical symbols to perform operations. Immediately translates, stores and executes the program. Includes string capability.

FOCAL™. DEC's own interpretive computer language which combines simplicity with computing power. Ideal for most scientific, engineering and math applications. FOCAL™ programs can be written and executed easily. Both 4K and 8K versions are included.

H11-18, Shpg. wt. 7 lbs. 30.00

H11A Accessories, Software and Manual Set

Order your H11A from page 70, order the accessories and interfaces you need for a custom-designed computer system below.

H11-1 4K Memory Expansion Module. Plugs into H11A or H11 backplane, adds 4K x 16-bit word capacity to memory. Uses high-reliability 1K x 4 static MOS RAM chips. Access time is less than 500 nS. Has decode circuitry for operation on 4K address boundaries. Handle for easy removal and insertion.

Kit H11-1, Shpg. wt. 2 lbs. **225.00**

Assembled and Tested version of above.

WH11-1, Shpg. wt. 2 lbs. **275.00**

H11-2 Parallel Interface. General-purpose parallel interface featuring 16 diode-clamped latched data input lines, 16 latched output lines, 16-bit word or 8-bit byte data transfers. Has LSI-11 bus interface and control logic for interrupt processing and vectored addressing; control status registers compatible with PDP-11 software routines. Four control lines for output data ready, output data accepted, input data ready and input data accepted logic operations. Maximum data transfer rate, 90K words per second under program control. Maximum drive capability, 25-ft. cable. Plugs into H11 backplane, can be used with DEC PDP 11/03 and other LSI-11 backplane machines. Also compatible with TTL or DTL logic devices. The H11-2 is required to use H11A or H11 with the H10 Paper Tape Reader/Punch.

Kit H11-2, Shpg. wt. 2 lbs. **95.00**

Assembled and Tested version of above.

WH11-2, Shpg. wt. 1 lb. **150.00**

H11-5 Serial Interface: Universal asynchronous receiver/transmitter serial interface module for use between LSI-11 bus and serial devices such as the Heathkit H9 video terminal (page 74) or H36 DEC Writer II (page 75). Has optically isolated 20 mA current loop or EIA interfaces, selectable baud rates of 50 to 9600. Plugs into H11 backplane, fully compatible with PDP 11/03 and other LSI-11 backplane machines. With all mating connectors.

Kit H11-5, Shpg. wt. 2 lbs. **105.00**

Assembled and Tested version of above.

WH-11-5, Shpg. wt. 1 lb. **150.00**

NEW! Adapter Cable for H11-5. Provides EIA industry standard electrical and mechanical interface between H11-5 and other computer peripherals. For use with H11 or H11A computers. Fully assembled and tested.

WH11-51, Shpg. wt. 1 lb. **15.00**

WH11-16 16K DEC Memory Module. Provides 16K dynamic MOS random access memory on a 5x8½" board. Has on-board refresh, 570 nS cycle time and 250 nS access time. Fully assembled and tested. **DEC (MSV11-DC).** Max. memory capacity of H11A is 30K.

WH11-16, Shpg wt. 2 lbs. **995.00**

WH11-32. Identical to 16K DEC memory above, but with 16 additional IC's containing an additional 16K of memory. Fully assembled and tested. **DEC (MSV11-DD).** Max. memory capacity of H11A is 30K.

WH11-32, Shpg. wt. 2 lbs. **1995.00**

H11-6 Extended Arithmetic Chip: Adds powerful arithmetic instructions to the LSI-11, including fixed point multiply, divide and extended shifts plus full floating point add, subtract, multiply and divide. Helps minimize arithmetic subroutines, speeds up program execution and development. Saves memory space too. 40-pin dual-inline package IC plugs into socket on H11A or H11 board.

H11-6, Shpg. wt. 1 lb. **159.00**

Manual Set for H11A Computer: Includes complete assembly and operation manuals for the H11A Digital Computer, H11-1 4K memory board, H11-2 parallel interface, H11-5 serial interface, H9 CRT terminal, and H10 paper tape reader/punch. Also includes complete software documentation — monitor, editor, assembler, linker, BASIC, FOCAL and related software. In handsome 3-ring binder.

HM-1100 Manual Set, Shpg. wt. 12 lbs. **25.00**

NOTE: The price of the manual set can be deducted when you order an H11A. Manuals are included with each kit.

HEATH/DEC Software License Agreement

This form MUST accompany your H11A computer order or your HT-11 Add-on order.

CUSTOMER SUBLICENSE GRANT

HEATH COMPANY (hereinafter referred to as Heath) pursuant to a license agreement with Digital Equipment Corporation (hereinafter referred to as Digital) does hereby grant to CUSTOMER a non-transferable and non-exclusive sublicense to use the following binary software programs (herein singularly and/or collectively referred to as SOFTWARE) under the terms and conditions stated in this sublicense grant:

☐ **PTSP-11 Paper Tape System** ☐ ***HT-11 Operating System with BASIC**

☐ **FOCAL/PTS Language Processor** ☐ ***HT-11-1 FORTRAN**

☐ **BASIC/PTS Language Processor**

Check those applicable to this order only. A separate customer sublicense grant form must be executed for any unlicensed software products purchased at a later date.

*Type of CPU and serial number information is required when ordering HT-11 or HT-11-1. Enter this information in the spaces provided below. When HT-11 or HT-11-1 are ordered with a Heath Computer, Heath will enter the appropriate information on the signed sublicense grant submitted with your order.

CPU Serial Number_____

Type of CPU_____

Software is furnished to CUSTOMER for use on a single Heath CPU only and may be modified, or copied (with the inclusion of DIGITAL's copyright notice) only for use on such CPU. The CUSTOMER shall not provide or otherwise make available the Software or any portion thereof in any form to any third party without the prior approval of DIGITAL. Title to the ownership of the Software shall at all times remain with DIGITAL.

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HEATH COMPANY William F. Johnson

By_____

CUSTOMER

By_____

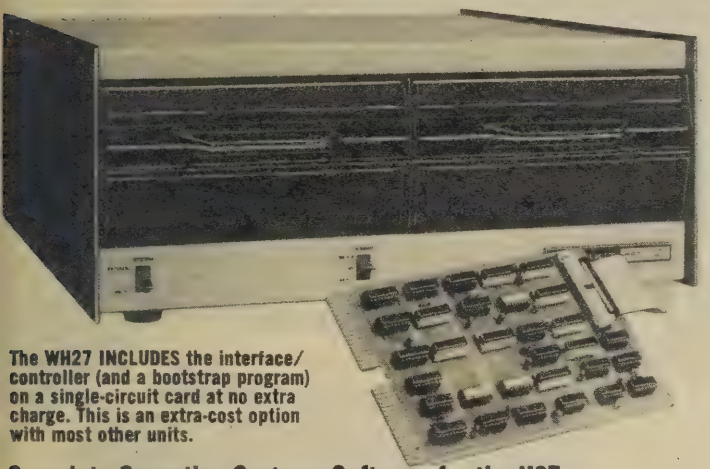
Customer's Signature



Choose the H11A System you want to meet your particular needs and save a big 5% on the total price!

Now you can select the H11 system that meets your particular requirements and get a big system discount. Simply choose an H11, any major peripheral including the H27 floppy disk, plus the software, memory and accessories you need. Then deduct 5% from the total price (excluding shipping and handling charges). It's the easy, efficient way to get your complete computer system and save money too!

NEW H27 Dual-Drive Floppy Disk System for H11 and H11A



The WH27 INCLUDES the interface/controller (and a bootstrap program) on a single-circuit card at no extra charge. This is an extra-cost option with most other units.

$1895.00 Kit

- **Z80 Microprocessor-based Controller**
- **Full Compatibility with DEC RX01® (PDP-11/03)**
- **Head Step Time of 6 mS**
- **Dual-drive for a total capacity of 512K bytes**

The H27 floppy disk system is the one H11 owners have been waiting for — it brings enormous power and versatility to the H11 (or H11A) computer system — at a price that's a lot less than comparable floppy disk systems on the market. Here's what you get:

Full compatibility with DEC® RXV11® (PDP-11/03 hardware and software) to give you the capability of using the hundreds of applications programs written by users of the DEC PDP-11/03, the world's most popular microcomputer. This performance-proven hardware and broad software base provides virtually unlimited versatility and outstanding computing power.

Dual-drive versatility with a total of 512K bytes of program and data storage space gives you enough room for most all general-purpose application needs. And the Z80 micro-controller in the WH27 gets average access time down to 6 mS. You'll have virtually immediate access to all your files and programs.

The H27, while maintaining full compatibility with the RX01 system, also gives you some unique features you won't find on other RX01 systems:

1. A built-in self-test diagnostic on power-up that protects existing programs on your disks.
2. A mechanical interlock that prevents accidental media damage. (If floppy is not seated properly, the door will not close and the H27 will not operate.)
3. A write-protect function that protects important files and programs from being written over inadvertently.
4. A reformatting procedure that gives you the capability of writing in IBM 3740 standard format.

The H27 includes a single board interface/bootstrap that uses just one backplane slot. This leaves you with more space for memory and I/O devices.

The precision dual-drive system (Memorex drives) is housed in a rugged metal cabinet to provide years of reliable performance. Overall dimensions: 8" H x 18" W x 20" D. For 100-135 or 200-270 V, 60 Hz AC.

The Operating System Software for the H27 (HT-11) described at left requires at least 16K words of memory to use its full capabilities.

Kit H27, Shpg. wt. 78 lbs. **1895.00**

WH27 Dual-Drive Floppy Disk. Fully assembled and tested.
Shpg. wt. 69 lbs. **2495.00**

Memorex Model 550 Floppy Drive. Not required for above.
H27-1, Assembled and Tested. Shpg. wt. 15 lbs. **495.00**

Pkg. of 5 Blank Disks. IBM 3740 format.
H27-2, Shpg. wt. 2 lbs. **25.00**

Complete Operating Systems Software for the H27

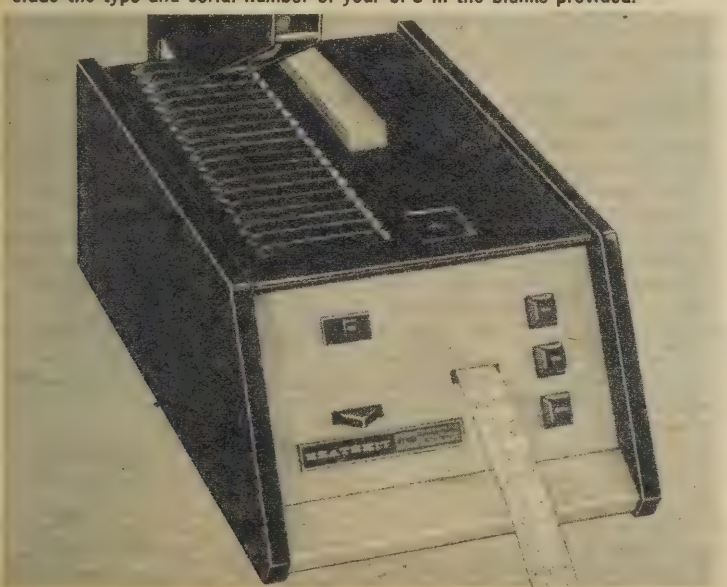
The HT-11 Operating System is a single-user, single-task system for interactive program development and on-line applications for the H11 or H11A computers. HT-11 programs include: Text Editor, Linker, Librarian, Peripheral Interchange, On-Line Debugging; and BASIC with variable length strings, "virtual" memory arrays, chaining and overlay capabilities, and a "desk calculator" mode for single calculations or debugging. Useful utilities provide macro expansion, assembly language processing and cross-reference listings. There is also a DUMP program that prints the contents of files, a program that compares files and prints their differences and a program that gives you the capability to install permanent modifications to existing programs.

Other features of HT-11 include: easy operation with NO system generation procedure; contiguous file structure for easy manipulations; device-independent I/O programming; Real-time interrupt capabilities to handle synchronous, asynchronous and event-driven I/O; low-overhead monitor with memory swapping functions for most efficient use of memory space. Supports H11-6 Arithmetic Chip. A super powerful and sophisticated system easily worth 8 to 10 times its price.

***HT-11, Operating System with BASIC.** Shpg. wt. 12 lbs. **350.00**

***HT-11-1, FORTRAN for HT-11 System.** Complete ANSI standard 1966 FORTRAN IV with extensions for inureased speed. 20 lbs. **250.00**

*NOTE: The HT-11 Disk Operating System and HT-11-1 FORTRAN are compatible only with the Heath H27 or WH27 Floppy Disk Systems. To obtain this software, The Heath/DEC Software License Agreement must be signed and you must include the type and serial number of your CPU in the blanks provided.



H10 Paper Tape/Reader Punch for H11A/H11 Computers

The H10 paper-tape reader/punch is a general-purpose storage peripheral using reliable low-cost paper tape. It's fully compatible and styled to match the H8 and H11 computers, and it works reliably with any other computer through a parallel interface. The reader reads tape up to a maximum rate of 50 characters per second. A full sensitivity adjustment on each channel permits any color, thickness, quality (oiled or unoiled) paper tape to be used. Sensitive Darlington photo transistors and an incandescent lamp reader head provide reliable reading. The punch operates up to maximum speed of 10 characters per second. Ratchet/solenoid drive and solenoid control of punches provide high-accuracy and consistent punching. Controls include power on-off, read and punch start. A feed control feeds blank tape through the punch for leader tape, a copy control provides fast, easy tape duplication. Interfacing is provided by separate 8-bit parallel input and output buses with standard TTL logic levels and handshaking lines for both reader and punch. A rear panel 24-pin interface connector and mating cable are supplied. Accessories include holder for roll paper tape, chad collector tray and collector box for fan-fold tape, 8" roll (900 ft.) blank paper tape. Cabinet with metal top and rugged steel chassis. 12⅝" H x 9¾" W x 19⅝" D. For 110-130 VAC, 60 Hz or 220-240 VAC, 50 Hz.

Kit H10, Shpg. wt. 33 lbs. **350.00**

Three Rolls Blank paper tape. Each 8" diameter, 900-ft. min.
H10-2, Shpg. wt. 5 lbs. **10.00**

Three Boxes Fan-Fold Tape. Approx. 1000 ft. each.
H10-3, Shpg. wt. 5 lbs. **15.00**

These Low-Priced Peripherals are a perfect match for your H8 or H11A Computers

You NEED a quality terminal to "communicate" with your computer. The H9 gives you complete I/O capability and the WH14 gives you a printed record of your programs.



$550.00

H9 CRT Video Terminal and Keyboard gives you full I/O capability for your H8 or H11

One of the lowest-cost ASCII terminals available anywhere — features a bright 12" CRT display with twelve 80-character lines, 67-key keyboard, all standard serial interfaces, plus a fully wired and tested control board and a wiring harness for simplified assembly.

The H9 video terminal is a general-purpose peripheral designed for use with the Heathkit H8 or H11 computers, or any digital computer. It provides keyboard input and a CRT for the convenient entry and display of computer programs and data. It can be used with any computer in dedicated stand-alone applications or in time-sharing systems.

Character format is standard upper case 5x7 dot matrix. The long form display is twelve 80-character lines. The short form display is forty-eight 20-character lines in four 12-line columns. An automatic line carry over feature executes line feed and return when line exceeds character count on both long and short-form displays. A built-in speaker provides audible end-of-line warning.

Auto-Scrolling is featured in both long and short-form. In the long form, as the line enters at bottom, the top line scrolls off-screen; in the short form, as the column enters from the right, the left column scrolls off-screen. Auto-scrolling can be defeated with a front panel switch. The cursor mark indicates the next character to be typed for accurate positioning. Cursor controls include up, down, left, right and home. Serial data baud rates are selectable from 110-9600. Baud rate clock output and reader control are available on the rear panel connector.

The erase mode permits automatic full page erase or erase to end of line starting at cursor position. A transmit page function allows a full page to be formatted, edited and modified, then transmitted as a block of continuous data.

The plot mode permits graphs, curves and simple figures to be displayed. Plotting can be accomplished via the front panel keyboard or from external inputs.

The H9 serial interface provides EIA RS-232C levels, a 20 mA current loop and standard TTL levels. Parallel interfacing includes standard TTL levels, 8 bits input and 8 bits output and 4 handshaking lines for connection to H10.

The PC control board is fully assembled and tested for added reliability and simplified kit assembly. 12½" H x 15⅝" W x 20¾" D. For 110 VAC, 60 Hz or 230 VAC, 50 Hz.

Kit H9, Shpg. wt. 50 lbs. **550.00**

Adapter Cable for H9. Provides EIA industry standard electrical and mechanical interface between H9 and other devices. **WH9-1,** Shpg. wt. 1 lb. **15.00**

Now available kit or wired! $595.00 Kit

NEW H14 Line Printer gives you "hard copy" output of your programs as you execute them

One of the lowest-cost line printers available — designed for use with the H8 and H11A computers — can also be used with most any other computer through a standard serial interface

The H14 is a versatile, low-cost microprocessor-controlled line printer designed to give you a "hard-copy" permanent record printout of your computer programming. These copies provide added convenience in reading, editing, debugging and modifying your programs. The H14 eliminates "losing" and recalling program lines (after they have scrolled off a CRT screen) when working with a CRT terminal. It also provides handy printed copies of address lines, lists, or other programming data you need for your hobby or business applications.

The H14 prints the standard 96-character ASCII set (upper AND lower case) on a 5x7 dot matrix print head. The impact printer uses readily available 0.5" wide nylon inked ribbon on 2" diameter spools. Maximum instantaneous print speed is 135 characters per second with a selectable line length of 80, 96 or 132 characters. Line spacing is 6 lines per inch with 8 lines per inch software selectable. Baud rates are selectable from 110-4800. The adjustable width sprocket feed allows the use of edge-punched fan-fold paper forms from 2.5" to 9.5" wide with a maximum thickness of 0.006".

The H14 connects to the H8 or H11 computer by the use of a standard (RS-232C) serial interface or 20 mA current loop. Handshaking is provided by reverse data channel or busy control signal. A 25-pin male EIA connector is provided for easy and convenient hookup. A convenient paper rack to keep printer output handy and organized is included at no extra cost.

The H14 is designed for years of reliable trouble-free service. It is supplied in kit form or fully assembled and factory tested. 18⅓" W x 4⅘" H x 14⅓" D. For 100-135, 200-270 VAC, 50-60 Hz. Requires H8-17, H8-18 or HC8-14 software for H8; HT-11 or H11-18 software for H11 or H11A.

Kit H14, Shpg. wt. 30 lbs. **595.00**

WH-14, Assembled version of above. Shpg. wt. 32 lbs. **895.00**

H14-1, 3450 Sheets 9½" x 11" Fan-Fold Paper for use with H14. 31 lbs. . . **30.00**

The World-Famous LA36 DEC Writer II Provides "Hard Copy" Printout for Your H8 or H11



$1495.00

Fully Assembled!

PREPAID SHIPMENT!

Has 7x7 dot matrix print head for crisp, clear character formation; switch selectable 10, 15 and 30 cps printing speeds; variable width forms handling from 3" to 14⅞" wide; adjustable left and right hand tractors half or full duplex operation; ANSI-standard multikey rollover and a typewriter-like keyboard. It prints 10 characters per inch horizontal spacing and 6 lines per inch vertical spacing. The integral 20 mA current loop interface makes the LA36 compatible with both the H8 and H11 computers, as well as most others. With connecting cable and integral stand. Overall size, 27½" W x 33¼" H x 24" D.

The H36 (LA36 DEC WRITER II) is shipped Motor Freight, prepaid to your nearest terminal within the Continental U.S. Include your phone number on order for notification of arrival. Arrangements for home delivery may be made at no extra charge in most cases. NO C.O.D. ORDERS.

H36 DEC Writer II, For 120 VAC, 60 Hz 1495.00

H36J DEC Writer II, For 220 VAC, 50 Hz. 1495.00

H36-1 Fan-fold Paper for H36. Standard 14⅞" x 11" white and green, single-part, lined paper. 3450 sheets per carton. **H-36-1,** Shpg. wt. 47 lbs. 30.00

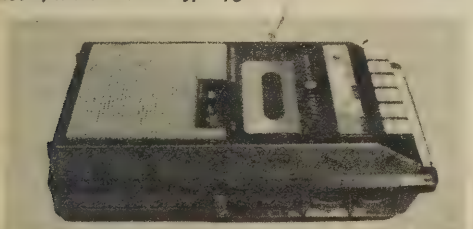
H36-2 EIA Interface. Provides EIA RS232-C interface for LA36, 9-ft. cable with 25-pin data-set type connector is also supplied. (DEC designation, LAXX-KG).

H36-2, Shpg. wt. 1 lb. 65.00

H36-3 Acoustic Coupler. Provides hookup to phone lines for time-sharing. Mounts in LA-36 with hardware provided. (DEC designation, LAXX-LM).

Kit H36-3, Shpg. wt. 10 lbs. 250.00

H36-4, Ribbon Accessory, Shpg. wt. 7 lbs. 15.00



Cassette Recorder/Player Peripheral

Required for use with H8 computer and H8-5 interface. Heath does not assume responsibility for improper software operation resulting from the use of other units.

ECP-3801, Assembled. 4 lbs. 60.00

ECP-3802, 30-Min. Cassettes. Pkg. of 3. 1 lb. 6.00

Here's Heath Complete Reference Library of Latest Publications

COMPUTERS AND MICROPROCESSORS

Microcomputer Dictionary and Guide (Matrix). Definitions on computers and related topics. **EDP-218** 17.95

Introduction to Microcomputers Vol. I. (Osborne). EDP-224 .....8.50

Introduction to Microcomputers Vol. II. (Osborne). EDP-225 .....15.00

How to Buy and Use Minicomputers (Sams) EDP-227 .9.95

TV Typewriter Cookbook (Sams). Good text explaining I/O terminals, interfacing, etc. **EDP-226** 9.95

8080 Programming for Logic Design (Osborne). EDP-229 .....8.50

8080 Software Gourmet Guide and Cookbook (Scelbi). EDP-228 .....10.95

Practical Microcomputer Programming: 8080 (Northern Technology). EDP-235 .....21.95

6800 Programming for Logic Design (Osborne). EDP-230 .....8.50

6800 Software Gourmet Guide and Cookbook (Scelbi). EDP-233 .....9.95

6800 Microprocessor Applications Manual (Motorola). EDP-244 .....25.00

M6800 Program Reference Manual (Motorola). EDP-245 3.00

Minicomputer Systems: Organization and Programming (Prentice-Hall). Emphasis on the PDP-11. **EDP-238** ..17.95

PDP-11 Programming (Algonquin). EDP-239 .....10.00

The Minicomputer in the Lab. (Wiley). EDP-246 ....19.50

Assembly Level Programming (Lexington). EDP-236 .14.95

101 BASIC Computer Games (DEC). EDP-237 .....7.50

BASIC Software Library, Vol. I. BASIC applications, bookkeeping games, pictures (graphics). **EDP-240** 24.95

BASIC Software Library, Vol. II. Math, engineering, plotting and statistical programs in BASIC. **EDP-241** ...24.95

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BASIC Software Library, Vol. V. Games, graphics, and useful math programs in BASIC. **EDP-251** 9.95

Minicomputers: Structure and Programming (Hayden). EDP-260 .....13.95

BASIC Workbook (Hayden). EDP-261 .....5.50

Your Home Computer (Dymax). EDP-252 .....6.00

Home Computers. 2[10] Questions and Answers.

Vol. I. Hardware (Dilithium). EDP-253 .....7.95

Vol. II. Software (Dilithium). EDP-254 .....6.95

Some Common BASIC Programs (Osborne). EDP-255 ..8.50

How to Program Microcomputers (Sams). EDP-256 8.95

8080A/8085 Assembly Language Programming (Osborne). EDP-262 .....7.50

Step-by-Step Introduction to 8080 Microprocessor Systems (Dilithium). EDP-263 .....7.95

8080 Microcomputer Experiments (Dilithium). EDP-264 13.95

BASIC Software Library Vol. VI (Sci. Res.) EDP-265 .49.95

BASIC Software Library Vol. VII (Sci. Res.). EDP-266 39.95

The 8080A Bugbook (Sams). EDP-267 .....8.95

BASIC Software Library Vol. VIII (Sci. Res.). EDP-269 19.95

Microprocessor Interfacing Tech. (Sybex). EDP-270 ..7.95

Practical Microcomputer Programming for the 6800 (Northern Tech.). EDP-271 .....21.95

8080 Machine Language Programming for Beginners (Dilithium). EDP-272 .....7.95

BASIC for Everyone (Prentice-Hall). EDP-273 .....8.95

Introduction to Computer Programming with BASIC Language. (Prentice-Hall). EDP-274 .....8.95

Getting Acquainted with Microcomputers. EDP-275 ..8.95

IC Converter Cookbook (Sams). EDP-276 .....13.95

8080/8086 Software Design (Sams). EDP-277 .....9.50

BASIC for Home Computers (Wiley). EDP-278 .....5.95

Fortran IV (Wiley). EDP-279 .....5.95

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Home TV-FM Antennas. EDP-186 .....6.50

Handbook of Video-cassette Recorders. EDP-258 ....5.95

Radio TV Handbook. GDP-315 .....11.95

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Handbook of Practical Electronic Teests and Measurements. EDP-137 .....17.95

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101 Ways to Use Your Oscilloscope. EDP-149 .....4.95

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How to Use Color TV Test Instruments. EDP-138 ...5.95

SHORTWAVE LISTENING

99 Ways to Improve your Shortwave Listening. Antennas, receivers, accessories, troubleshooting, etc. **EDP-155, 4.50**

Shortwave Listener's Handbook. Covers basic equipment, modifications, receiver characteristics, antennas, schedules and reception reports. Lists major shortwave stations by country and frequency. **EDP-196** 4.90

SECURITY

Building and Installing Electronic Intrusion Alarms. EDP-135 .....4.50

The Electronic Invasion. Electronic snooping explained. **EDP-203** 5.95

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The TTL Data Book. Specifications, pin outs, test data, applications. **EDP-220** 4.95

TTL Cookbook. What TTL is, how it works and how to use it. **EDP-183** 8.95

IC Op-Amp Cookbook. Theory of operations, applications. **EDP-184** 12.95

Tube Substitution Handbook. Lists 12,000 replacements for all types of tubes. **EDP-174** 2.95

Transistor Substitution Handbook. Substitutions for 100,000 bipolar transistors. **EDP-175** 4.50

The 555 Timer Applications Source Book with experiments. EDP-249 .....6.95

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Advanced Radio Control. Planes, cars, boats, rockets, etc. **EDP-158** 4.95

Radio Control Handbook. Covers most control systems. **EDP-159** 6.95

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Amateur Radio License Study Guides — make getting any radio license easy. **NOVICE, EDP-122** 5.95

GENERAL, EDP-123 .....7.95

ADVANCED, EDP-124 .....5.95

EXTRA, EDP-125 .....5.95

ARRL Amateur's Handbook. Up to date electronics theory and application. Tube data, construction projects, antenna theory, SSB etc. **HDP-293** 9.75

Radio Handbook. Comprehensive radio theory and practice for hams. **EDP-117** 19.50

Amateur Tests and Measurements. EDP-119 .....5.50

US Callbook. Complete listing of Amateurs in all US call areas and territories. More. **EDP-126** 14.95

DX Callbook. Complete listing of foreign Amateurs, addresses, postal rate charts, call zone maps. **EDP-127** 13.95

73 Dipole Antennas. EDP-180 .....4.95

73 Vertical and Beam Antennas. EDP-181 .....5.50

ARRL Antenna Handbook. EDP-182 .....5.00

REFERENCE/GENERAL

How to Build and Use Electronic Devices. Guide to using op-amps and other electronic devices. **EDP-202** 9.95

ABC's of Soldering. EDP-178 .....3.95

Reference Data for Radio Engineers. EDP-176 ....30.00

Radio Operator's License Question and Answer Manual. EDP-193 .....7.95

Metal Detector Handbook. Basics of metal detection, techniques, etc. **EDP-222** 9.50

How to Build Metal/Treasure Locators. EDP-257 ...3.95

BOOK ORDERING INFORMATION

There is a $10 minimum order for a BOOK ONLY purchase. No minimum on books purchased with kits. Do not calculate postage on book orders, just add 50¢ for each book to the postage column on the order blank. Do not use zone chart for book orders.

The Ignition Analyzer That Can Pay For Itself!

Whether you use it at home or in your auto repair shop, the CO-2600 pays off in substantial savings of time and money. Save when you build it yourself, save when you keep your cars running at top performance and efficiency!

Deluxe Ignition Analyzer

$399.95

- **Pushbutton Selection of Individual Cylinders**
- **Parade, Superimpose, and Individual Patterns**
- **Solid-State Construction**



Companion Timing Light

Deluxe timing light and distributor advance meter designed specifically for use with the CO-2600. Measures advance to 60°.

Kit COA-2600-4, Shpg. wt. 3 lbs. **47.95**

Designed for the auto hobbyist yet perfect for the professional garage operation, the Heath CO-2600 provides the most asked for features in an ignition analyzer of this quality.

Rock steady parade patterns are made possible by the latest design in inductive pickup circuitry and switch selection of number of cylinders — four, six or eight. Dwell measurements are indicated on the big eight-inch meter.

Has two voltage ranges — 0-2 V for corroded connections and points measurements and 0-20 V for battery condition and general distribution checks.

Cylinder selection buttons can be pushed in multiple numbers so that banks of cylinders can be shorted for carburetor balance and for display of one or more cylinders. Both parade and super-imposed displays or primary or secondary waveforms at two different amplitudes are available on the 12″ diagonal CRT.

Rugged high-temperature oil and gas resistant neoprene cables provide easy, positive connections to engine. Includes adaptor for GM HEI ignition systems. For use with 4, 6, or 8-cylinder (4-cycle) or 2-rotor Wankel engines and standard, transistorized or C-D ignition systems. With Heath's excellent manuals to guide you, you'll find assembly and operation of the CO-2600 to be a simple matter. Use with optional timing light below for a complete, economical home tuneup center.

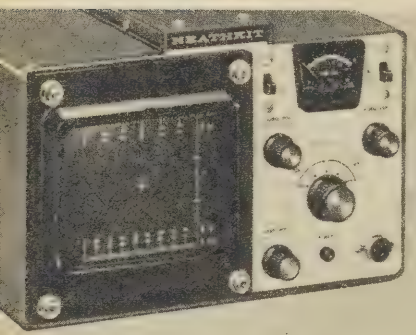
Kit CO-2600, Shpg. wt. 83 lbs. **399.95**

COA-2600-2, Alternator Test Adaptor. Shpg. wt. 1 lb. **5.95**

COA-2600-3, Scope Cart. Shpg. wt. 25 lbs. **34.95**

Kit COA-2500-1, Low-cost Timing Light for CO-2600 only. Shpg. wt. 2 lbs. ..**19.95**

CO-2600 SPECIFICATIONS: For Use With: Standard, transistorized,, or C-D ignition systems. 4, 6, or 8-cylinder (4-cycle), or 2-rotor Wankel engines. **Signal Pickup:** Direct for primary, inductive for parade trigger, and capacitive for secondary. **Tachometer and Voltmeter Accuracy:** ±3% of full scale on any range. **Scope Vertical Expand:** Minimum 2 to 1. **Operating Temperature Range:** 32°F to 104°F. **Tachometer:** 1000 rpm, 3000 rpm, or 6000 rpm. **Voltmeter:** 2 or 20 VDC. **Power Requirements:** 110/130 or 220/260 VAC 50/60 Hz. **Weight:** 53 lbs. **Dimensions:** 12⅞″ H x 25¼″ W x 14⅛″ D.



Versatile Heathkit Ignition Analyzer

$169.95

- **Built-in rpm indicator**
- **Clamp-on inductive pickup for easy hookup**

Can be used with any standard, transistorized or capacitive discharge ignition system on four, six or eight-cylinder engines with distributors.

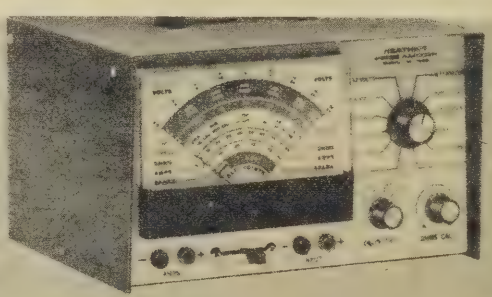
You select one of four different patterns — primary or secondary, in either parade or superimposed display. For detailed analysis, the horizontal sweep can be expanded 10 to 1, vertical sweep 2 to 1.

The optional 12-volt inverter mounts permanently to the unit's rear panel, for portable or "on the road" tests. Includes adapter for use with General Motors High Energy Ignition systems.

Kit CO-1015, Shpg. wt. 22 lbs. **169.95**

Kit COA-1015-1, 12-Volt Inverter. Lets you operate CO-1015 from your car's 12-volt lighter socket. Shpg. wt. 3 lbs. **34.95**

CO-1015 SPECIFICATIONS: Power Requirement: 120/240 VAC, 60/50 Hz, 16 W. **RPM Range:** 400-5000. **Cylinders:** 3, 4, 6 or 8. **Vertical Expand:** Approx. 2 to 1. **Horizontal Expand:** Approx. 10 to 1. **Sweep Length:** ±5% over entire RPM range. **Intensity:** Fixed. **Presets:** Focus, Astigmatism, Trigger Adjust, Tach Cal. **Connection Cables:** 12′ pick-up clamp; ground and secondary clip leads extend 2′ beyond pick-up clamp. **Tachometer:** 0-1000 RPM, 0-5000 RPM ±5% of full scale. **Dimensions:** 7″ H x 10½″ W x 17½″ D.



Low-Cost Engine Analyzer

$74.95

- **Works with any ignition system**
- **Tests accessories and all electrical wiring**

This professional-grade instrument tests conventional, magneto, transistorized, and most capacitive discharge ignition systems — both positive and negative ground, any voltage, on any 3, 4, 6 or 8-cylinder engine.

Also tests storage battery, generator or alternator, voltage regulator, starter, distributor, ignition circuit (points, condenser and coil), accessories and all the electrical wiring. Operates on 3 standard "C" batteries (not supplied). Has convenient carrying handle. Comes complete with leads and accessories.

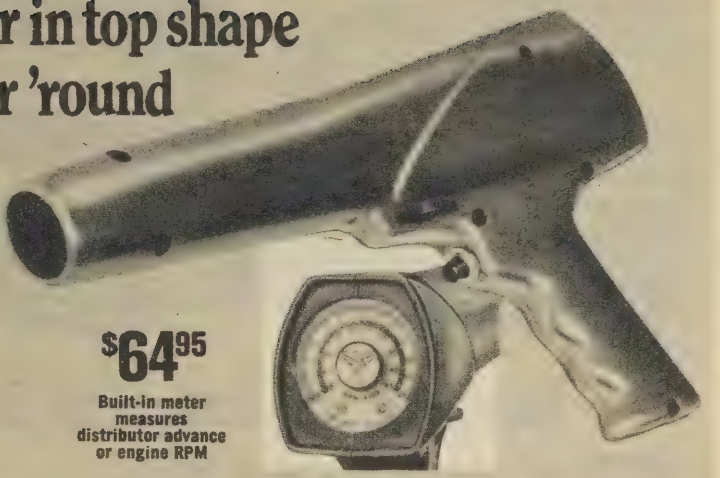
Kit CM-1050, Shpg. wt. 8 lbs. **74.95**

CM-1050 SPECIFICATIONS: Voltmeter Ranges: 0-3.2 V DC, 0-32 V DC, ±3% of full scale. **Ohm-meter:** Two ranges: R x 1 (100 Ω center scale). R x 100 (10 Ω center scale), ±3° arc. **Tachometer:** Two ranges: 0-1200 rpm, 0-6000 rpm, ±3% of full scale. **Dwell Meter:** Two ranges: 0-45° (on 0-60° scale). 0-60°, ±3% of full scale. **Amperes:** −5 to +90 amperes DC, ±3% of full scale. **Spark Output:** 0-50. **Point Resistance:** Good/Bad. **Alternator:** Good/Bad. **Condenser:** 0.22 μF, 10%. **Accuracy:** ±3% of full scale. **Cables Supplied:** Two 8″ two-conductor test cables. One 2′ alligator to alligator lead. One 2′ alligator to push-on connector lead. One calibration cable. **Accessories Supplied:** 90-ampere shunt. 0.25 Ω resistor assembly. One insulation-piercing alligator clip. Two #10 solder lugs. (#14). **Dimensions:** 7½″ H x 10½″ W x 8¾″ D.

Keep your car in top shape all year 'round



$29.95
With Inductive Pickup



$64.95
Built-in meter measures distributor advance or engine RPM

Value-priced Timing Light provides a flash so bright it can be seen even in daylight

Features a handy inductive pickup that clips directly around the #1 sparkplug wire without removing wire, using adapters, etc. (Recommended for GM-HEI and other systems, where high voltage may be present.) Has a super-bright xenon flash bulb that can be seen easily even outdoors. Can be hooked up while the engine is running, and won't interfere with other auto test equipment either. Comfortable pistol-grip handle for easy operation, insulated blue-plastic housing for shock protection. Polarity protected. Powered by your car's battery or a separate 12-volt supply. With all cables, pickup and clips. Compact size, only 6½" H x 2" W x 10" L.

Kit CI-1040, Shpg. wt. 3 lbs. 29.95

CI-1040 SPECIFICATIONS: Useful Light Range: Up to 2 ft. in daylight. **Triggering:** Current pickup coil. **Power Requirement:** 12 VDC battery or separate 12 VDC power supply. **Dimensions:** 6½" H x 2" W x 10" L.

Extra-versatile Timing Light with Built-in Advance Meter and Tachometer

The CI-1096 incorporates a timing light, advance meter and tachometer in one compact, lightweight unit. Merely press the trigger to get a super-bright timing flash and a meter indication of distributor advance in degrees. Take your finger off the trigger and the meter indicates engine RPM. The 250° meter movement measures mechanical or vacuum advance up to 60° from 1500 to 4500 RPM and indicates engine speed to a maximum of 4500 RPM. Inductive pickup clips around the #1 sparkplug wire for quick connection. Powered directly from your car's battery or from a separate 12 VDC power supply. Functions with all types of ignition systems.

Kit CI-1096, Shpg. wt. 4 lbs. 64.95

CI-1096 SPECIFICATIONS: Useful Light Range: Up to 2 ft. in daylight. **Triggering:** Current pickup coil. **Power Requirement:** 12VDC battery or separate 12VDC power supply. **Dimensions:** 7¼" H x 2⅝" W x 11½" D.

Heathkit Capacitive-Discharge Ignition System improves your car's performance

- **Helps you get longer life from plugs and points**
- **Improves gas mileage to save you money and energy**



$34.95 CD System Alone

Get up to 50,000 miles between tuneups on cars, trucks, inboards, I/O & outboard marine engines with 12V battery/distributor/coil negative ground systems. Delivers a larger, more precisely-controlled spark to the plugs to better burn the air-fuel mixture. Reduces problems caused by point bounce and wear. Further extends plug life and the tune-up interval. External override button switches to conventional system. Build it in a couple of hours, install in less than that. 3⅛" H x 3¾" W x 6" D.

Kit CP-1060, Shpg. wt. 3 lbs. 34.95

LAST CALL! Breakerless Ignition Adaptor for CD Ignition Systems. (Not shown.) Develops a timing signal that isn't subject to mechanical problems of point wear and bounce. Replaces the points of all pre-1975 GM V-8 engines, and all AMC V-8s with external dwell adjustment (not for others). Designed for operation only with C-D Ignition Systems such as the CP-1060 or similar units.

Kit CP-1051, Shpg. wt. 2 lbs. 24.95

SPECIAL COMBO OFFER! SAVE $14.95!

CPS-1060, CP-1060 Ignition and CP-1051 Adaptor Together, Shpg. wt. 6 lbs. 44.95

NEW Battery-Operated Timing Light/Tachometer



$79.95

Operates on its own rechargeable batteries for safety, convenience and portability

The CI-1098 professional-quality timing light operates from its own rechargeable power supply and requires only a single inductive pickup connection to the #1 spark plug wire on your car's engine. It's also ideal for use on boats or other vehicles where battery placement may be inconvenient or inaccessible. The compact, high-impact housing lets you keep your hand at a safe distance from moving engine parts while you aim the light into narrow spaces. The built-in high voltage power supply and xenon flash tube provide a much brighter flash than conventional lights that operate from spark plug voltage only. The timing flash can be seen up to two feet away even in daylight. The built-in tachometer has 2000 RPM and 6000 RPM full-scale ranges that are selected by a handy finger switch. The two-color switch position matches the tachometer scale for quick, easy range selection. Includes rechargeable battery and battery pack. To recharge the battery, simply connect the charger to the timing light. **Kit CI-1098,** Shpg. wt. 4 lbs. 79.95

CI-1098 SPECIFICATIONS: Useful Light Range: up to 2 feet in daylight. **Triggering:** spark current inductive pickup. **Tachometer Ranges:** 0-2000 RPM and 0-6000 RPM. **Meter:** 2⅛", 500 μA, 250° movement. **Meter Accuracy:** ±5% of full scale. **Power Sources:** Internal, rechargeable 6-volt, 0.6 ampere-hour nickel cadmium battery and 120/240 volt charger. **Dimensions:** 7¼" H x 2⅝" W x 11¼" D.



Reliable and Practical Heathkit Auto Accessories

1 NEW Universal Small Engine Tune-up Meter

Ideal for garden tractor, lawn mower, motorcycle, snowmobile, outboard motors, small cars, etc. Can be used with all small engines including Briggs and Stratton. Tests volts, ohms, dwell & continuity on 1 to 4 cylinder, 2 & 4 cycle engines. Built-in tach, snap-on pickup. Less batteries. Has large easy-to-read meter, self-contained carrying case for easy portability.

Kit CM-2045, Shpg. wt. 4 lbs. **44.95**

CM-2045 SPECIFICATIONS: Voltmeter: 0-20 V DC. **Ohmmeter:** 0 to 100 kΩ (10 kΩ center scale). **Tachometer:** Two ranges: 0-3000 rpm, 0-15000 rpm. **Dwell Meter:** Four scales: 1 cylinder. 90°-360°; 2 cylinder, 40°-180°; 3 cylinder, 30°-120°; 4 cylinder, 20°-90°. **Power:** three 1.5 V "C" batteries. **Dimensions:** 9⅛" H x 9⅜" W x 5¼" D.

2 Easy To Use Heathkit Three-In-One Tune-up Meter

It really pays to keep your car running at its best and the CM-1073 can help you do just that. The CM-1073 combines a distributor cam dwell meter, an electronic tachometer and a direct-current voltmeter in a single, compact unit. Measures dwell angle on most 4-cycle, 3, 4, 6 and 8-cylinder engines. Shows engine RPM on two scales — 0-1500 RPM and 0-4500 RPM. Checks voltage from 0-20 volts. Can be used with both 6 and 12-volt electrical systems with positive or negative ground, and with all new factory-installed solid-state and high-energy ignition systems. It has just two leads to connect to the engine and draws its power from car battery. Complete with leads, instructions and high-impact case. Easy kit assembly too.

Kit CM-1073, Shpg. wt. 4 lbs. **26.95**

CM-1073 SPECIFICATIONS: Dwellmeter: Three dwell scales: 8 cyl., 10-45 degrees; 4 cyl., 20-90 degrees; 6 cyl. & 3 cyl. x 2, 25-60 degrees. **Tachometer:** Two RPM ranges; Low range — 0-1500 RPM; High range — 0-2500 RPM. **Voltmeter:** Direct reading scale, 0-20 VDC. **Power Requirement:** 10 mA approximate average current. **Meter:** 4½", 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 4¼" H x 8½" W x 7¼" D.

3 Exhaust Gas Analyzer Gives Better Tune-ups

Perhaps the best way to make sure your automobile's engine is really running at its maximum potential and emitting as few pollutants as possible. The CI-1080 monitors your car's exhaust for minimum air pollution and maximum efficiency by measuring thermal conductivity of the exhaust gases. Shows the air-fuel ratio, combustion efficiency and the percentage of carbon monoxide in the exhaust. The CI-1080 is essential when you're checking a car which must meet specific requirements for exhaust emissions, or when you simply want peak operating efficiency. Comes with all cables and tubing for easy connection. The CI-1080 is contained in a rugged carrying case with a foldaway handle that lets you carry it anywhere it's needed. The large meter face is easy to read and is accurate to within one air to fuel ratio depending upon the type of fuel used.

Kit CI-1080, Shpg. wt. 6 lbs. **69.95**

CI-1080 SPECIFICATIONS: Meter Scales (3): 11.5-15.0 Air-Fuel Ratio. 70%-90% Combustion Efficiency. 0-8% Carbon Monoxide. **Exhaust Type:** From 4-cycle gasoline engines. Not for use with catalytic converters. **Accuracy:** Within 1 Air-Fuel Ratio depending on fuel used. **Meter:** 4½", 100-0-100 μA. **Connectors:** Battery cord, 7 feet. Sensor cord, 21 feet. Exhaust flexible tube, 30 inches. **Power Requirement:** 6-volt or 12-volt car battery, less than 150 mA. **Weight:** 4 lbs., 12 oz.

Get quick, sure starts in the coldest weather with these Automatic Battery Chargers



15-Amp Automatic Battery Charger with Quick-start Booster

Quick starts even when your battery is dead!

$64.95 Charges 12-volt car battery at 15-amp rate, boosts at 50-amp rate for quick start when battery is dead. Use on negative or positive ground. Meter monitors battery to indicate charge rate, current, and full charge. Circuit breaker protection.

Kit GP-1044, Shpg. wt. 22 lbs. **64.95**

GP-1044 SPECIFICATIONS: Charge Rate at 120 VAC (primary): Boost, 50 amperes (max. 1 minute). Normal, 15 amps. Shuts off automatically after battery is fully charged. **Output Voltage:** Shuts off when voltage at terminal reaches 14.5 V. **Power Requirement:** 110-130 VAC, 60 Hz. **Size:** 6⅛" H x 11½" W x 7¾" D.



10-Amp Automatic Battery Charger

Solid-state, automatic circuitry can't overcharge your car's battery

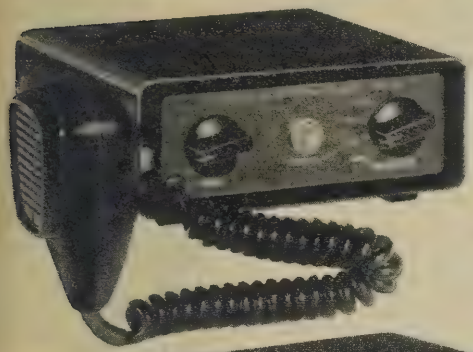
$39.95

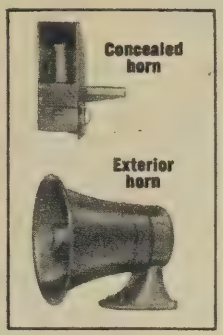
Keeps your car battery at full charge for easier starts in any weather and better overall performance. Won't operate unless correctly connected, can't over-charge the battery. Protection circuit shuts off unit when battery fully charged. Easy to use — just connect the cables to 12-volt battery terminals and plug into AC outlet.

Kit GP-21, Shpg. wt. 13 lbs. **39.95**

GP-21 SPECIFICATIONS: Charge Rate: 10 amperes maximum at 120 VAC line. **Output Voltage:** Between 13.2 VDC and 13.6 VDC. **Power Requirement:** 105-130 VAC, 60 Hz. **Dimensions:** 5½" H x 9" W x 6⅜" D.

Auto Accessories For Your Pleasure and Convenience





Heathkit Deluxe Mobile Siren/PA Systems

It's a 55 watt siren with automatic or manual "wail," a 20 watt PA to amplify your voice, or a radio call alert when you're away from your vehicle. Has push-to-talk mike. NOTE: Please check standards for mobile sirens in your area.

Kit GD-18, Shpg. wt. 6 lbs. **64.95**
Assembled WD-5130, siren/PA amp, Shpg. wt. 6 lbs. **99.95**
Assembled GDA-18-1, exterior horn, Shpg. wt. 10 lbs. **67.95**
Kit GDA-18-2, concealed horn (requires 4½" x 4½" x 13" behind grille), Shpg. wt. 10 lbs. **67.95**
Assembled WDA-5130-2, concealed horn, Shpg. wt. 10 lbs. **84.95**
SAVE $10.95 on systems! If purchased separately, 132.90
GD-18A (Kit GD-18 and Exterior Horn) Shpg. wt. 21 lbs. **121.95**
GD-18B (Kit GD-18 and Concealed Horn) Shpg. wt. 21 lbs. **121.95**



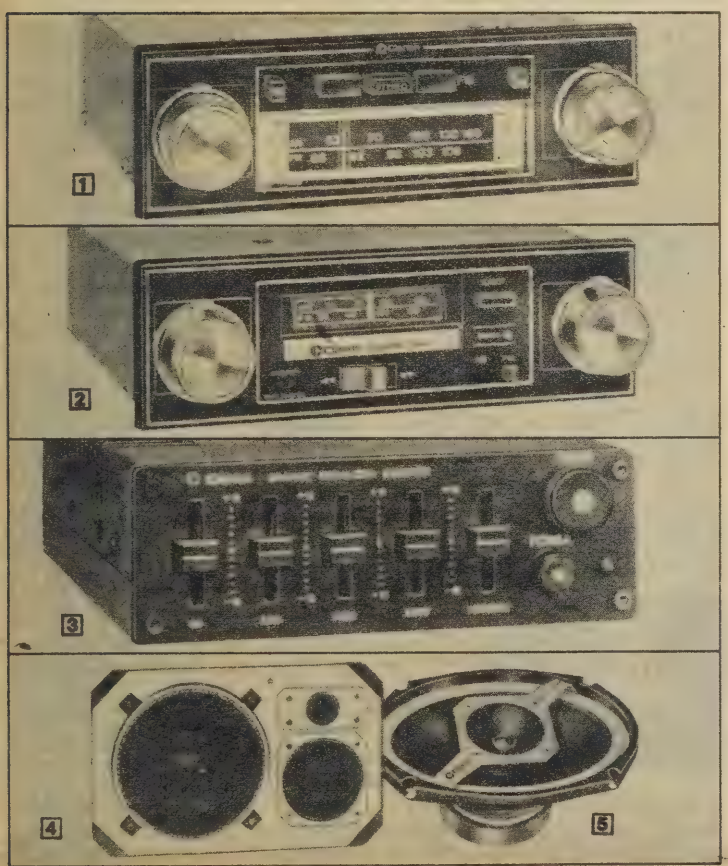
- **Helps stop windshield wiper "slapping" in light rain conditions**

Heathkit Windshield Wiper Delay for safer driving

Eliminates turning wipers on and off while driving in fog, mist, or light rain. A front panel control gives you selection of "normal" and "delay" modes. A preset control varies the number of sweeps, the front panel control varies delay time. An easy kit to build. The handsome one-piece molded plastic case mounts on or under the dash with adhesive strip or bracket. See compatibility specifications below.

Kit CH-1068, Shpg. wt. 2 lbs. **15.95**

CH-1068 SPECIFICATIONS — Delay interval: 5 to 30 seconds minimum. **Sweeps interval:** .5 to 10 seconds minimum. **Input voltage:** 13.8 volts DC, ±20%. Positive or negative ground. **Wiper System Compatibility:** (Electric Only) **GM:** All single and two speed systems. **Ford:** Most small and intermediate models. Not compatible with full size models or '72-'76 Torino, or Montego, '74-'76 Cougar. **Chrysler:** Single and two speed systems on small and intermediate models which do not use a motor reversing parking system. Ask dealer about your car's system. **AMC:** Single and two speed systems. Other models: Electric wipers which do not use a motor reversing parking system. **NOTE:** Heath does not supply automotive wiring diagrams for this unit.



Fully Assembled Clarion Car Stereo Components

1 Clarion In-Dash 8-track Stereo

With its combination 8-track tape player and AM/FM stereo receiver, the PE-623A features an FET front end for improved FM performance, digital track selector and FM stereo indicator display, and a handy local/distance switch for optimum FM reception. A small chassis and universal installation kit lets you easily mount the PE-623A in the dash in most cars. 7⅛" W x 2" H x 4¾" D. Mfr's suggested list price, $161.95.

CRP-1266, Shpg. wt. 5 lbs. **109.95**

2 Clarion In-Dash Cassette Stereo

The PE-666A puts the convenience and fidelity of cassette stereo in your car. Featuring a combination AM/FM stereo receiver and cassette tape system, this musical performer has fast forward/rewind controls, automatic reverse for continuous play, and a sensitive FET front end in the FM section for improved reception and enjoyment. 7⅛" W x 2" H x 5½" D. Mfr's suggested list price, $239.95.

CRP-1267, Shpg. wt. 6 lbs. **169.95**

3 Clarion Graphic Equalizer/Power Booster

Give your music a boost and tailor its sound to the acoustic environment of your car with Clarion's 100-EQB-2 graphic equalizer and power booster. Hooks up to most tuners and tape players, features 15 watts RMS output per channel and five individual slider controls to let you precisely adjust each of five frequency bands from 30 through 15,000 Hz, to suit your individual taste. Also has front/rear fader control. 6¾" W x 2½" H x 6" D. Mfr's suggested list price, $109.95.

CAP-1264, Shpg. wt. 4 lbs. **89.95**

4 Clarion Three-Way Car Stereo Speakers

For the finest sound in car stereo add Clarion's "Six Pack" to the rear deck of your car! The speaker features a 5" woofer, 2½" mid-range, and 1" tweeter for beautifully transparent 3-way sound. Includes open mesh grill covers. Mfr's suggested list price, $126.95.

CSP-1262, SK-99 & grill, Shpg. wt. 10 lbs. ..... Pair **89.95**

5 Clarion Two-Way Car Stereo Speakers

These two-way coaxial speakers feature a 6" x 9" woofer and 3" center mounted tweeter. Speakers install flush in the rear deck of your car and have handsome open mesh grills for optimum sound quality. Mfr's suggested list price, $67.95.

CSP-1261, SK-88 & grill, Shpg. wt. 10 lbs. ..... Pair **49.95**

Convenient and Practical Auto Accessories



$27.95 new $44.95

New Digital Readout Quartz Clock displays the time in soft blue fluorescent numerals

The GC-1406 is a fine automobile timepiece that's attractively styled to blend with the interior of your car. The time is displayed in soft blue glowing numerals that dim for nighttime driving. It's comparable to clocks now being offered as factory options in many of today's finer makes of automobiles but at a much lower price.

An automatic dimming circuit conveniently dims the display for night driving while the quartz crystal-controlled circuitry ensures accuracy. The 12-hour display turns off with the car ignition to conserve the battery, but the clock continues to keep accurate time.

Once set with pushbuttons behind the snap-on front panel, the GC-1406 will remain accurate under the wide range of temperatures that are typical of your auto's interior. No other adjustments are necessary and there are no external controls that can be misadjusted. May be mounted on or under the dash of your car, camper, boat or motorcycle or anywhere a source of 12 VDC, negative ground is available (not approved for aircraft use).

Kit GC-1406, Shpg. wt. 1 lb. **27.95**

New Deluxe Digital Readout Clock with Trip Timer and Stopwatch functions for real versatility

Similar to the GC-1406 at left, the GC-1415 Digital Quartz Clock/Timer also includes these additional features. Switch-selectable timing ranges of 0 to 24 hours for timing trips in hours and minutes, and 0 to 10 minutes for timing minutes and seconds, as a stopwatch.

The clock and timer can be switched back and forth without disturbing the setting or accuracy of either function. Versatile timer accumulates to 24 hours, and can be stopped without being reset with the "HOLD" feature, allowing driving time to be accumulated without including stops.

The GC-1415 is ideal for precision trip timing to check driving efficiency. It's a practical addition to any vehicle — car, truck or van — that's used often for long trips. For 12 VDC negative ground.

Kit GC-1415, Shpg. wt. 2 lbs. **44.95**

GC-1406/GC-1415 SPECIFICATIONS — Display: Four digits and colon; vacuum fluorescent readout tube. **Format:** 12-hour. **Temperature Range:** —25°C to 60°C (—17°F to 140°F). **Power Requirements:** Voltage: 10 to 17 volts DC. Current at 13.2 volts DC: Display off: 15 mA. Display on: 140 mA. **Dimensions:** 3.2″ H x 4.7″ W x 3.2″ D. **Weight:** 12 ounces.



Heathkit Ultrasonic Automobile Intrusion Alarm

- **It's on duty when you're not there**
- **Alarm delay lets you enter & reset**

Protect your automobile and its contents with this reliable alarm. When unauthorized entry occurs, the GD-1558 waits 10 seconds and then begins sounding the horn. The kit is very easy to assemble. Installation requires just three connections. Optional horn relay kit adapts to cars without relay. Only 4¾″ W x 3⅜″ D x 1⅜″ H, operates from your car's 12-volt battery.

Kit GD-1558, Shpg. wt. 2 lbs. **44.95**
Kit GDA-1558-1, Horn Relay Kit, Shpg. wt. 1 lb. **2.95**



Protect your Car with this Mobile Security System

- **5-15 second adjustable delay**

Protects your car and the valuables in it! An optional horn relay adapts the GD-1157 to cars whose horns do not use a relay or use a plug-in relay. Optional siren accessory provides attention-getting "yelp" sound instead of car horn. With all switches and hardware. Alarm unit, 2⅛″ H x 4¾″ W x 5″ D. For 12 VDC negative ground only.

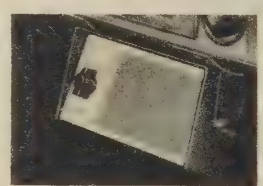
Kit GD-1157, Shpg. wt. 3 lbs. **19.95**
Kit GDA-1157-1, Optional Siren Accessory, 2 lbs. **19.95**
GDS-1157, GD-1157 and Siren Together, 12 lbs. If pur. sep., $39.90 ..... **34.95**
Kit GDA-1157-2, Optional Horn Relay, 1 lb. **2.95**



Highway Emergency Strobe Light

Makes you visible so emergency help gets there quick! Just insert the adaptor plug provided into your car's cigarette lighter. A 12 ft. cord lets you place the flashing light in any spot on the car. Has non-marring magnetic base plate, highly visible flashing strobe with a flash rate of better than 1 per second, amber dome lens. High-impact plastic case is moisture and corrosion resistant, has storage for cable. For 12 VDC.

Kit GD-1026, Shpg. wt. 3 lbs. **29.95**



Cab-to-Camper Intercom

Provides reliable two-way communications from cab to camper. 3-position switch on Master selects "Standby", "Monitor" or "Talk" modes. Remote can initiate calls and has "Radio" position to bring music into camper from cab radio. Requires 12 volt, 250 mA power source. Shpg. wt. 5 lbs.

Kit GD-160, Master, Remote & Cable **29.95**
GDA-160-1, Accessory Plug. For quick disconnect when camper and cab are separated. Shpg. wt. 1 lb. **4.50**



Learn Electronics the EFFECTIVE Heathkit way!

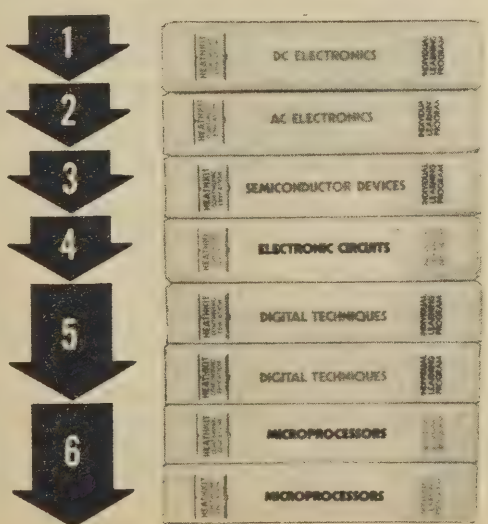
There's never been a better, faster, lower cost way to learn electronics than these Heathkit Programs! Learning electronics could very well be the most important step you'll ever take, so, naturally, there are many factors to consider in choosing your method of learning. If you're like most people, you don't have the time for conventional learning institutions. Needless to say, they are also very costly. The Heathkit Continuing Education Series was conceived with these factors in mind to make learning electronics more convenient and affordable for everyone. Thousands of people just like you are finding out what makes Heathkit learning programs so tremendously successful. Simple, easy-to-use and EFFECTIVE!

Among the many reasons for the wide acceptance of these programs is their simplicity. Each learning program is simply and logically arranged for easy, step-by-step "programmed" learning. No facet of the material is omitted and nothing is assumed. Each program includes everything you need for a high degree of understanding. Audio records (or optional cassettes) reinforce the text material and an optional final exam lets you test your overall comprehension.

The Continuing Education Programs are economical too. The first four use the same trainer so you can get a complete education in fundamental electronics for less than $230, a substantial savings over courses offered at night schools, community colleges, etc. (See our package price on page 85). The advanced programs, Digital Techniques and Microprocessors, require separate trainers, but they still cost less than competitive courses.

Recommended Order

The Heathkit Self-Instruction Programs are Designed to let you Progress from DC Electronics to AC Electronics to Semiconductor Devices to Electronic Circuits. These are the Four Basic Programs. For Optional Advanced Study, The Digital Techniques Program Provides the Background for the Microprocessor Program.



Get "Hands-on" experience for a better understanding of electronics. Learning electronics and being able to apply what you've learned are, of course, the goals you seek to achieve with the Heathkit Continuing Education Series. For that reason, we have spared no effort in assuring your complete comprehension. Our optional Electronic Trainers perfectly illustrate the Heath approach to learning. Specifically designed for use with each program, these trainers give you actual "hands-on" experience with electronic components and circuitry. It's an acknowledged fact that you learn best by doing and the trainers let you do exactly that. You get a better grasp of circuit concepts and perform the program projects quicker and easier as well. Solderless connectors on the trainer panel make hookup of the components supplied with the program quick and neat. Built-in power supplies and signal sources provide convenient operation. The trainers are available in both kit and assembled form.

When you've finished the program, the trainer still serves as the ideal device for breadboarding circuits of your own design. We highly recommend these trainers as supplements to the Heathkit Individual Learning Programs. A record (or cassette) player is needed to play the audio portion of the material. A VOM for measuring voltages is also needed, and an oscilloscope is required for some of the experiments in the Electronic Circuits and Digital Techniques Programs.

SUBSCRIBE TO PERSONAL LEARNING, THE HEATH NEWSLETTER ABOUT CONTINUING EDUCATION
See page 51 for details.

CEUs and the Heath Guarantee: If you elect to take the optional final exam and score 70% or better, you will receive a Certificate of Achievement and be awarded Continuing Education Units (CEUs). CEUs are a nationally-recognized way of acknowledging participation in non-credit adult education. CEU's and Certificates of Achievement awarded with each program are issued only on completion of the optional final examination. Therefore, only one set of CEU's and Certificate are issued with each program sold. Your hard work and achievements are thus protected from unauthorized duplication and the integrity of your completed program is maintained. We're so confident you'll be happy with any program you order, we even give you a full money-back guarantee. If for any reason you are dissatisfied with these programs, Heath Company will refund the full purchase price of the text material (less trainer).



Certificate of Achievement is suitable for framing

IMPORTANT NOTE: All the Continuing Education Programs and trainers may qualify for a Federal Tax Deduction. Treasury Regulation 162-5 permits an income tax deduction for educational expenses undertaken to: (1) maintain or improve skills required in one's employment or other trade or business, or (2) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status or rate of compensation.

NEW Heathkit-Automotive Electrical Systems!

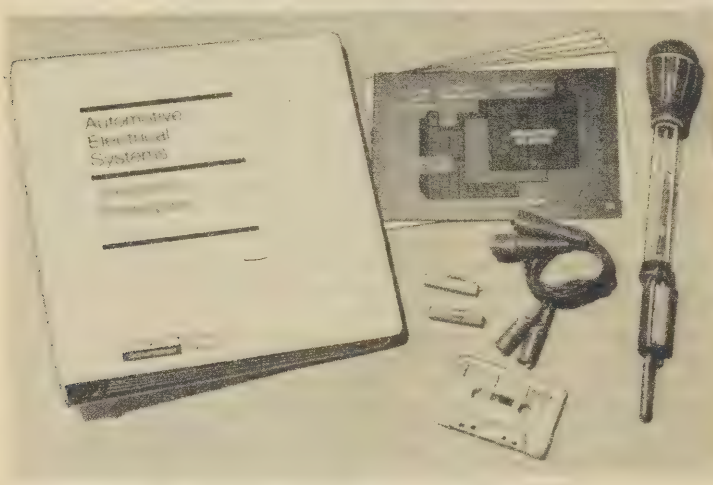


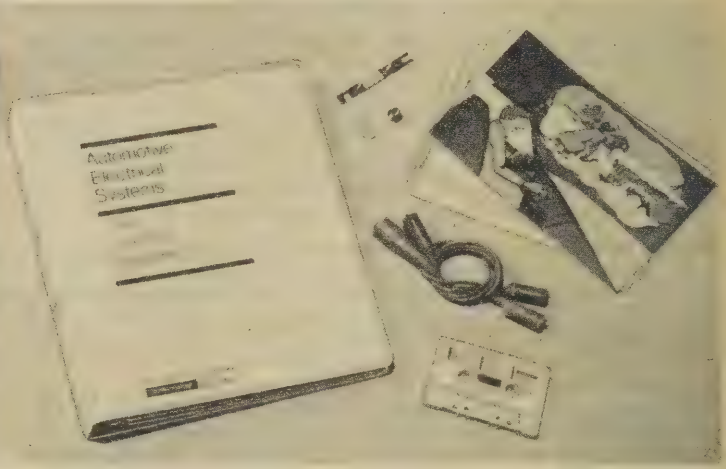
In a major expansion of our highly successful Continuing Education Series, we have now designed a new series of programs to help you learn about your automobile. Using the same PROVEN and EFFECTIVE techniques of the Electronics Education Series, you can learn how to maintain, service and UNDERSTAND the working of your automobile. By doing your own service and maintenance, you can SAVE MONEY over the life of your car, and you can keep your car running longer. With today's high car prices, that's practically putting money in your pocket!

The major portion of the format of these programs is the audio-visual material. Full 4-color printed visuals are combined with explanatory audio cassettes to SHOW and TELL you exactly what to do in each step of the program. This audio/visual material is supplemented by a programmed text which lets you review and reinforce what you have learned. As a final step, practical projects and experiments you can perform ON YOUR OWN CAR!

The programs in the Automotive Education Series are offered in modular form with each module leading to the next. Module 1, Electrical Principles and Module 2, Starting Systems are offered below. Module 3, Charging Systems and Module 4, Accessories and Body Electrical, will be available soon. Module 5 is an optional final exam kit to test your knowledge of the entire program. Upon passing this final exam (passing grade 70%), you will receive 4.0 CEU's and a Certificate of Achievement. These programs are comprehensive enough to provide background for certification exams given by the National Institute For Automotive Service Excellence (NIASE).

The only materials you need for these programs are a cassette recorder, common automotive tools, and a meter such as the CM-1050 (page 76) or equivalent. We're so confident you'll enjoy and appreciate these programs that if, for any reason, you are dissatisfied, we will REFUND the money for the program material.





Module 1 — Electrical Principles of the Automobile

The first module in this program covers basic electrical principles, battery operation and the theory of your electrical system. Upon completion of this program, you will be able to:

1. Clean, test and maintain your car battery for better performance in any kind of weather.
2. Diagnose and troubleshoot basic circuit problems in your car's electrical system.
3. Locate and repair defects such as circuit opens or shorts and defective components.
4. Locate and replace defective bulbs and fuses.
5. Make practical current, voltage and resistance measurements to help you understand the operation of your automobile.

You will also learn how to identify and troubleshoot series and parallel electrical circuits; make electrical measurements of voltage, resistance and current; locate open circuits; measure headlamp current and battery leakage. The shop project will allow you to measure specific gravity of your battery, check and correct electrolyte level, clean terminals and connectors, and maintain battery and battery housing. The program is supplied with an attractive binder, cassette holder, clip leads, electrical parts for experiments and a professional hydrometer.

Program EA-11, Shpg. wt. 5 lbs. **24.95**

Module 2 — Starting System Fundamentals

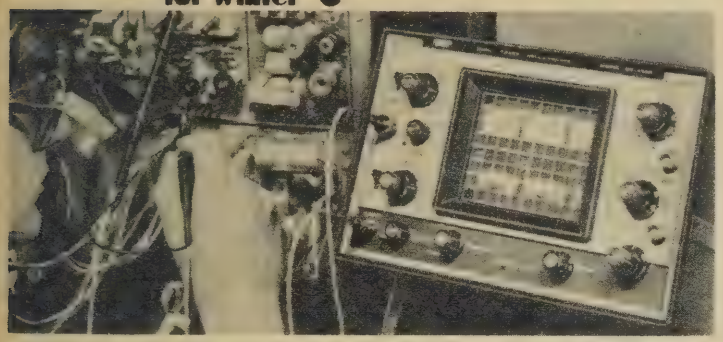
The second module of this educational series covers the automobile starting system. Upon completion of this module, you will be able to:

1. Diagnose and repair starting system problems.
2. Make practical electrical measurements on the starting system.
3. Troubleshoot starter motor, solenoid and ignition switch defects.
4. Replace and adjust starting system components.
5. Describe the relationship between starter motor current draw and battery voltage.
6. Explain why cold weather starts are difficult.
7. List the safety precautions that should be observed when jump-starting an engine.
8. Trace current flow in a representative starter circuit.
9. Measure the IR drop of the battery to starter circuit and explain.
10. Connect a tachometer to the engine and check engine RPM, when turned by the starter.

You will also learn how to service the starter system, diagnose problems, measure voltage, detect an open circuit, measure starter system current draw and more. The shop project includes starting system cranking checks, headlight cranking test, measuring starter current draw and a control circuit bypass test. The program is supplied with an attractive binder and all electrical parts.

Program EA-12, Shpg. wt. 4 lbs. **24.95**

NEW! for winter ● Now Learn how to use Test Instruments!



This new Heathkit Continuing Education Program is designed to give you a thorough understanding of modern test equipment and its many and varied uses. It uses the same PROVEN and EFFECTIVE techniques of the other Heathkit programs — programmed instructions with self-test reviews and quizzes, electronic components for "hands-on" experiments using the ET-3100 electronic trainer and the test equipment related to the material. It's an ideal way to learn about instruments for your electronics hobby, professional training or career advancement.

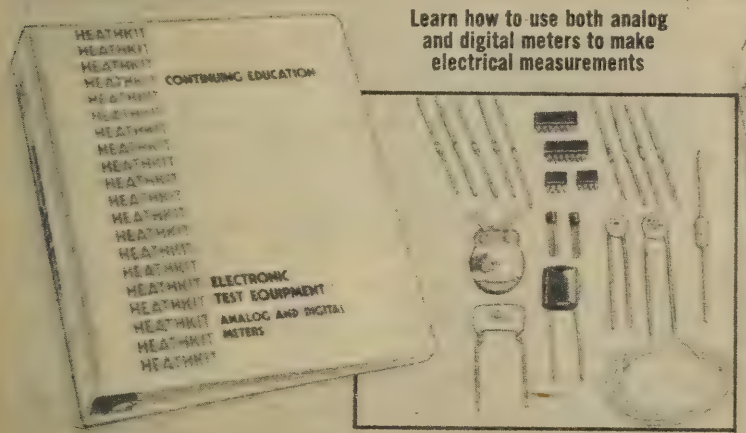
The program teaches you what test equipment is, how it works, how to specify it and how to use it. The complete program consists of five separate modules, with each module containing all the parts and text materials to implement the experiments relating to that module. The Modules consist of: 1. Electronic Meters Analog and Digital; 2. Oscilloscopes; 3. Frequency Generation and Measurements; 4. Special Measuring Instruments. The final module is the optional exam covering the material learned in the first four modules. Modules 1 and 2 are sold below, the remaining modules will be available in future catalogs. Upon completion of the final exam, you will receive a Certificate of Achievement and 6.0 Continuing Education Units.

Completion of the first four programs — AC and DC Electronics, Semiconductor Devices and Electronic Circuits — or equivalent knowledge is required for understanding and completing this program.

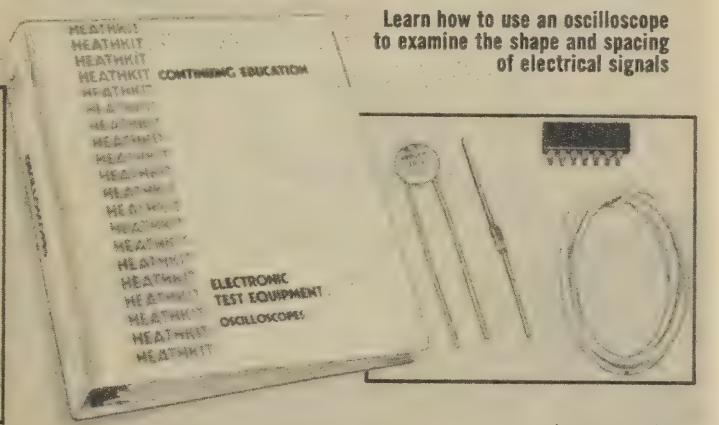
A knowledge of test equipment is essential for radio and TV service, electronic design, engineering, almost any occupation dealing with electronics. If you're a Ham, hi-fi buff, or just like to tinker and experiment with electronics, knowing about test equipment and how to use it can be beneficial. The information contained in the Test Equipment Self-Instruction Course is authoritative, up-to-date and thorough. It will provide you with an excellent background in understanding test equipment plus the ability to operate it accurately and efficiently.

NOTE: Each module requires the test instruments discussed in that module for effective learning. See pages 42-63 for the Heathkit instruments you may need.

Learn how to use both analog and digital meters to make electrical measurements



Learn how to use an oscilloscope to examine the shape and spacing of electrical signals



Module 1: Analog and Digital Meters

This first learning module consists of two clearly written texts, one describing analog meters and the other digital meters. The unit on analog meters covers types of movements and how they are used to measure voltage, current and resistance; the operation of the volt-ohm-milliammeter (VOM) and the electronic VOM. The unit on digital meters covers analog to digital conversion; compares analog to digital meters and discusses factors to consider when selecting your own meter. Upon completion of these units, you will be able to:

1. Use both analog and digital meters to make electrical measurements.
2. Explain how the sensitivity of a meter is determined.
3. Explain how high input impedance is achieved in an electronic meter.
4. Describe the uses of high-voltage ohms and low-voltage ohms positions of an ohmmeter.
5. Explain the advantages of a digital meter over an analog meter.
6. Give the advantages of an integrating meter over a non-integrating meter.
7. Explain the operation of integrating and non-integrating meters.
8. Describe how current and resistance are measured with a digital multimeter.
9. Explain what is meant by resolution, sensitivity and accuracy.
10. List three types of probes used with meters and explain what each does.

The program includes parts for "hands-on" experiments using the optional ET-3100 Electronic Trainer (page 84). Both a digital and analog meter should also be used for most effective learning.

Program EE-3105-1, Shpg. wt. 4 lbs. **19.95**

Module 2: Oscilloscopes

Oscilloscopes are essential for designing, testing and servicing electronic equipment. There are an almost infinite number of wave-shapes that can exist with electrical signals and with an oscilloscope, you can actually see and interpret them. This module discusses the components and circuits which make up the oscilloscope. It also discusses the function and operation of various controls and how to interpret various scope displays. Upon completion of this module, you will be able to:

1. Identify the various parts of a Cathode Ray Tube from a drawing of the CRT.
2. Explain deflection sensitivity and bandwidth.
3. Identify the difference between horizontal and vertical deflection circuits.
4. Explain the purpose of blanking and unblanking.
5. Explain the difference between triggered and free-running sweeps.
6. Describe the operation of a delayed sweep.
7. Identify three ways a dual-trace presentation can be obtained.
8. Explain the difference between chop and alternate methods of dual-trace development.
9. Explain the operation and uses of both storage and sampling oscilloscopes.
10. Identify various oscilloscope controls and explain the uses of each.
11. Describe the use of lissajous figures for making phase and frequency measurements.

This program includes parts for "hands-on" experiments using the optional ET-3100 Electronic Trainer (page 84). An oscilloscope is also required for making various measurements.

EE-3105-2, Shpg. wt. 3 lbs. **14.95**

HEATHKIT CONTINUING EDUCATION

Begin your education with DC Electronics

The basis for a complete understanding of electronics



The first of the incredibly effective Heathkit Continuing Education Series and the foundation on which all the following programs are built.

DC Electronics is the first step you'll take toward understanding the fascinating world of electronics. As you would expect, the DC Electronics Program is simply and logically arranged and assumes no prior electronic knowledge. It begins at basic electron theory and goes on in detail with nothing omitted. Everything you need for successful completion and a high degree of understanding is included. The only other materials needed are a record or cassette player, a few basic hand tools and a VOM (such as the Heathkit IM-5284, p. 53). Progressing at your own established pace, you learn in an unhurried environment free from pressure. And learning is easy too with simple, step-by-step "programmed" instructions. Audio aids help emphasize the text material and an optional final exam lets you test your overall comprehension.

Essentially, DC Electronics covers current, voltage, resistance, magnetism, Ohm's Law, electrical measurements, DC circuits, inductance and capacitance. In short, a complete foundation in basic electronics. Included are texts, records, and electronic components for 20 different experiments. Cassette tapes that duplicate the material on the records are optionally available. The average completion time for DC Electronics is 30 hours. A knowledge of high school math is assumed and an appropriate review of such material is included.

The measure of any learning endeavor is of course, the new knowledge and abilities you gain as a result of your studies. When you have successfully completed DC Electronics, you will be able to accomplish the following:

1. Solve basic electronic problems involving current, voltage, resistance, and power.
2. Explain the relationship between current, voltage, resistance, and power.
3. Discuss the relationship between electricity and magnetism.
4. Using a schematic diagram as a guide, construct DC circuits with components such as resistors, relays, switches, lamps, batteries, and capacitors.
5. Given a wiring diagram of a circuit containing components such as resistors, relays, switches, lamps, batteries, and capacitors, draw an equivalent schematic diagram.
6. Use a multimeter to measure current, voltage and resistance.
7. Convert from one metric prefix to another and to work with powers of ten.
8. Explain the construction, operation, and purpose of resistors, potentiometers, switches, fuses, relays, capacitors, inductors, and batteries.
9. Demonstrate basic safety procedures designed to protect you and your test equipment.
10. Build and experiment with basic DC circuits of your own design.

Course EE-3101, Shpg. wt. 7 lbs. **44.95**
EEA-3101, Optional Cassettes*, Shpg. wt. 1 lb. **6.95**
SAVE $9.95! EES-3101, Program with Kit Trainer. Shpg. wt. 18 lbs. **99.95**
ECP-3801, Cassette Record/Player, (not shown, see p. 75) Shpg. wt. 4 lbs., **60.00**

Basic Experimenter/Trainer provides hands-on learning experience

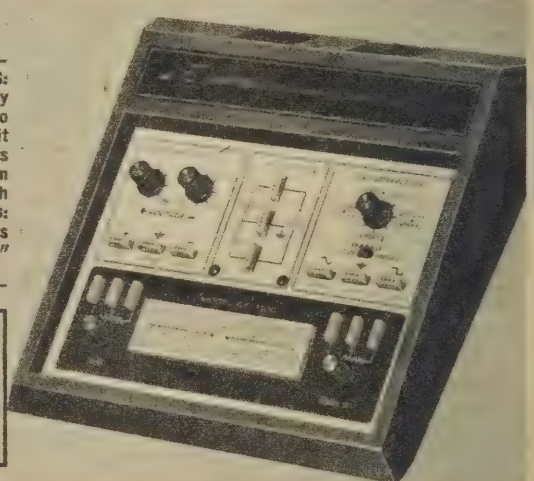
For the DC, AC, Semiconductor and Electronic Circuits programs — helps you perform each experiment quickly and easily. And after you finish the program, it's ideal for "breadboarding" your own design projects. Has solderless breadboarding sockets, 2-range variable sine and square wave (200-20,000 Hz) signal source, dual-variable power supplies for positive and negative voltages (both variable over 1.2 to 16 volts, 120 mA, both regulated and short-circuit protected), 1k and 100k linear potentiometers. Center tapped transformer provides 30 V rms, 60 Hz for line experiments. For 120 VAC, 60 Hz or 240 VAC, 50 Hz. Available as an easy-to-build kit or in factory-assembled and tested form.

Kit ET-3100, Shpg. wt. 5 lbs. **64.95**

ETW-3100, Factory Assembled Trainer.
Shpg. wt. 6 lbs. **99.95**

ET-3100/ETW-3100 SPECIFICATIONS: POWER SUPPLIES: Positive Supply Output: 1.2 to 15 volt DC, continuously variable. **Load Regulation:** Better than 1%, no load to full load. **Current Output:** 100 mA with short circuit protection. **Negative Supply Output:** −1.2 to −15 volts DC, continuously variable. **Load Regulation:** Better than 1%, no load to full load. **Current Output:** 100 mA with short circuit protection. **GENERAL: Power Requirements:** 105-130 volts or 210-260 volts RMS, 50-60 Hz, 7 watts maximum. **Dimensions:** 12⅛" wide x 11¾" deep x 3½" high. **Net Weight:** 4 lbs.

For Fastest Service
Use The Heathkit "Hot Line"
(616) 982-3411
Anytime day or night



AC Electronics Learning Program



Once you've mastered DC Electronics, you'll move on to the next phase of what comprises the nucleus of electronics technology.

With basic DC theory and operation behind you, you'll eagerly progress to this, the second of the Heathkit Continuing Education Series. AC Electronics covers the fundamentals and basic theory of alternating current in a simple, straightforward manner that can be easily understood. Included is everything you need for thorough, no-compromise learning. The only other materials you need are a record or cassette player, a few basic hand tools, a VOM (such as the Heathkit IM-5284, page 53) and the ET-3100 Trainer (listed on page 83).

Included are texts, records and 16 electronic components for 8 different experiments. If you choose to take the optional final exam and score 70% or better, you will receive a Certificate of Achievement and 1.5 Continuing Education Units.

Upon completion of AC Electronics, you will be able to:

1. Explain the difference between ac and dc.
2. Describe the operation of a simple ac generator.
3. Determine the average or effective value of an ac sine wave when its peak or peak-to-peak value is known.
4. Determine the frequency of an ac waveform if its period is known.
5. Use AC meters to measure current, voltage, and power.
6. Analyze simple ac circuits which contain resistance.
7. Describe the electrical property of capacitance.
8. Analyze ac circuits with capacitance or capacitance and resistance.
9. Describe the electrical property of inductance.
10. Analyze ac circuits with inductance or inductance and resistance.
11. Explain the basic transformer action.
12. Determine the current, voltage, and power relationships at the inputs and outputs of both ideal and practical transformer circuits.
13. Analyze ac circuits which contain resistance, capacitance, and inductance.
14. Explain the operation of series and parallel resonant circuits.

AC Electronics, EE-3102, Shpg. wt. 6 lbs. **44.95**
EEA-3102, Optional Cassettes*, Shpg. wt. 2 lbs. **6.95**
ECP-3801, Cassette Recorder/Player, (not shown, see p. 75) Shpg. wt. 4 lbs., **60.00**
SAVE $9.95! EES-3102, Program with Kit Trainer, Shpg. wt. 18 lbs. **99.95**

Semiconductor Devices Learning Program



A fascinating subject necessary for anyone going on in their study of electronics — the devices that reshaped every aspect of the industry

No education in electronics would be complete without including solid-state technology. Semiconductor Devices teaches you all about this comparatively-recent development that is prevalent in nearly everything electronic. Audio aids help emphasize the text material and you get hands-on experience with the interesting experiments. An optional final exam lets you test your overall comprehension.

Semiconductor Devices covers semiconductor fundamentals, diodes, zeners, bipolar transistor operation and characteristics, FET's, thyristors, IC's and optoelectronics. Included are texts, records and 27 electronic components for 11 different experiments.

Prerequisites for the Semiconductor program are the first two Heathkit Continuing Education Programs (DC and AC Electronics) or equivalent knowledge. If you choose to take the optional final exam and score a passing grade of 70% or better, you will receive a Certificate of Achievement and 3.0 Continuing Education Units.

Upon completion of the Semiconductor Program, you will be able to:

1. Describe the electrical characteristics of semiconductors.
2. Name the primary advantages of semiconductor devices over vacuum tubes.
3. Explain how the most important semiconductor devices operate.
4. Describe how semiconductor devices are constructed.
5. Use semiconductor components properly without damage.
6. Recognize semiconductor packages and their schematic symbols.
7. Design your own circuits using semiconductor devices.
8. Test various semiconductor devices for proper operation.

Semiconductors, EE-3103, Shpg. wt. 6 lbs. **44.95**
EEA-3103. Optional Cassettes*, Shpg. wt. 1 lb. **6.95**
ECP-3801, Cassette Recorder/Player, (not shown, see p. 75) Shpg. wt. 4 lbs., **60.00**
SAVE $9.95! EES-3103, Program with Kit Trainer, Shpg. wt. 18 lbs. **99.95**

Electronic Circuits Learning Program

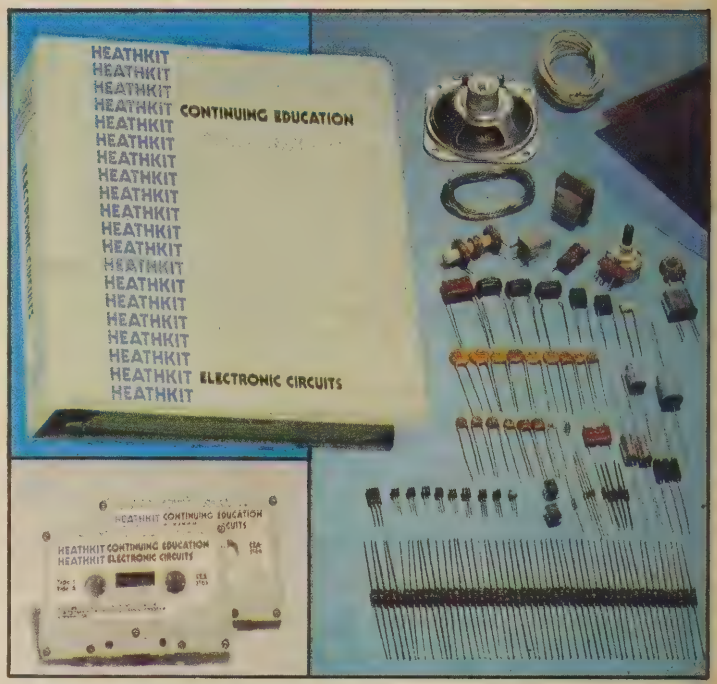
Brings the knowledge you've gained in the first three programs to bear on the latest circuits used in solid-state electronics

This program covers the operation of common solid-state electronic circuits: basic amplifiers, typical amplifiers, operational amplifiers, power supplies, regulators, oscillators, pulse circuits, modulators and demodulators. It shows you how to analyze and design simple inverting and non-inverting amplifiers; the basics of oscillation and the operation of commonly used LC, RC and crystal oscillators. You learn about pulse circuits and multivibrators and study amplitude and frequency modulation including SSB. Learn how to use a voltmeter and oscilloscope to analyze the operation of electronic circuits. This program brings all the theory of your first programs together and shows you how it applies in actual circuit operation. Prerequisites are AC and DC Electronics and Semiconductor Devices (or equivalent knowledge). Included are texts, records, and 110 electronic components for 18 different experiments. If you take the optional final exam and score 70% or better, you will receive a Certificate of Achievement and 4.0 Continuing Education Units.

When you have completed this course, you will be able to:

1. Identify basic transistor amplifier circuits and describe their operation.
2. Discuss direct current amplifiers, audio amplifiers, video amplifiers, intermediate frequency amplifiers, and radio frequency amplifiers.
3. Explain the operation of differential amplifiers, comparators, summing and difference amplifiers, and active filter circuits.
4. Analyze inverting and non-inverting operational amplifiers.
5. Explain power supply rectifiers, filters, and regulation circuits.
6. Discuss the principles of oscillation, LC, RC, and crystal oscillators.
7. Discuss pulse shapers, multivibrators, Schmitt trigger, ramp generators.
8. Explain amplitude and frequency modulation, the heterodyne principle, and modulation and detection circuits.
9. Construct a wide variety of modern electronic circuits.
10. Use voltmeter and oscilloscope to analyze electronic circuit operation.

Electronic Circuits, EE-3104, Shpg. wt. 8 lbs. **54.95**
EEA-3104, Optional Cassettes*, Shpg. wt. 1 lb. **6.95**
ECP-3801, Cassette Recorder/Player. Shpg. wt. 4 lbs. **60.00**
SAVE $9.95! EES-3104, Program with Kit Trainer. Shpg. wt. 19 lbs. **109.95**

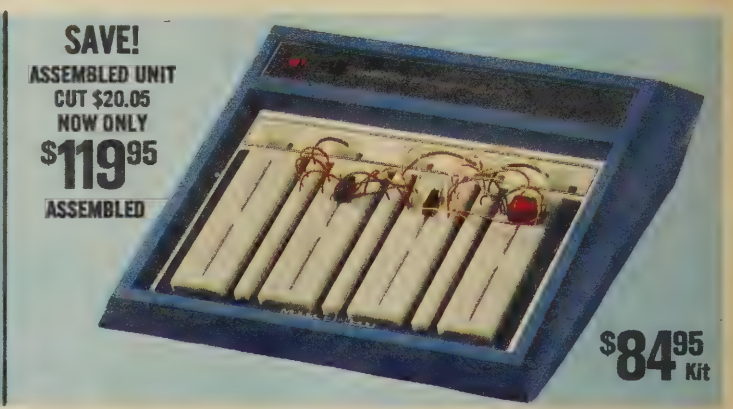


SAVE $29.80 on your Basic Electronics Education!

Order all four Basic Electronics Programs together with the ET-3100 Electronic trainer for a fundamental electronics education. If purchased separately, $254.75.

ETS-3114, Shpg. wt. 54 lbs. **224.95**





Learn to solder the easy Heathkit way

$9.95

- **Invaluable for Novice Kitbuilders**
- **Ideal for Company Training**

Heath's EI-3133 Soldering Manual and Kit teaches you the techniques necessary for high reliability soldering in all electronics applications. Whether you're a kitbuilder, hobbyist or experimenter, it's the perfect way to learn or brush up on this skill. Using a proven programmed instruction format, the text covers mechanical connection, tinning, temperature control and much more. And to give you "hands-on" experience for really effective learning, a handy practice kit has been included. Great for individuals or schools and industry and a great first kitbuilding experience. Requires soldering iron and small hand tools.

Program EI-3133, Shpg. wt. 2 lbs. **9.95**

Versatile, Convenient Laboratory Breadboard Experimenter Kit

Makes basic circuit prototyping a breeze. Solderless sockets and a built-in power supply make hook-up and teardown quick and easy. It can even be used to test electronic components. Great for school labs.

Kit ET-3300, Shpg. wt. 6 lbs. **84.95**
Assembled ETW-3300, Shpg. wt. 6 lbs. **Was $140.00 in Cat. 841** **119.95**

ET-3300 SPECIFICATIONS: OUTPUTS: +5 VDC @ 1.5 amps; +12 VDC @ 100 mA; −12 VDC @ 100 mA. **REGULATION: Load:** Less than 2% variation from no load to full load on all supplies. **CURRENT LIMITING:** Fixed current limiting of each supply at rated current provides short-circuit protection. **POWER REQUIREMENT:** 120/240 VAC 60/50 Hz 30 watts at full load. **SIZE:** 3½" H x 12" W x 12" D.

Digital Techniques Learning Program



Learn the operation of digital logic circuits and the major applications of digital techniques in electronics. Covers everything from TTL and CMOS to ROM's, PLA, microprocessors and computers.

The Digital Techniques program covers fundamentals and theory, digital logic circuits, digital integrated circuits, Boolean algebra, flip-flops and registers, sequential logic circuits, combinational logic circuitry and digital design. It shows you how to design digital circuitry for virtually any modern electronic application. The program assumes a prior knowledge of electronics, (either the four basic Heathkit programs or equivalent) however it can be completed by technically oriented people with a math or science background. Includes text, records and 44 electronic components for 24 experiments. The ET-3200 Digital Trainer is required to perform the experiments. Heath also recommends the IM-5284 multimeter (page 53) and an oscilloscope such as the IO-4541 (page 60) is necessary for some experiments.

If you choose to take the final exam, a passing grade of 70% or better earns you 4.0 Continuing Education Units and a Certificate of Achievement.

Digital Techniques, EE-3201, Shpg. wt. 9 lbs. **59.95**

EEA-3201, Optional Cassettes*, Shpg. wt. 1 lb. **6.95**

ECP-3801, Cassette Recorder/Player. Shpg. wt. 4 lbs. **60.00**

SAVE $9.95. EES-3201, Program with Kit Trainer. Shpg. wt. 21 lbs. **129.95**

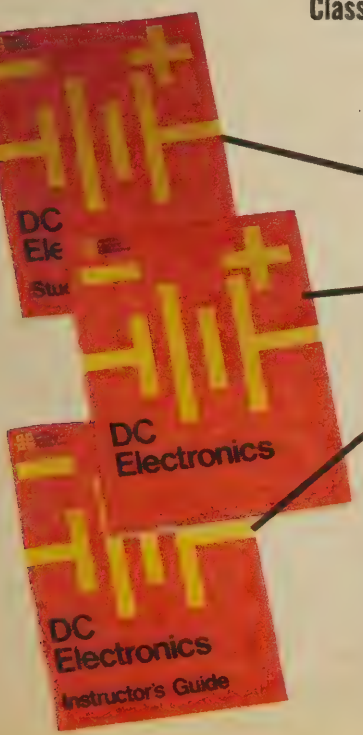
Versatile Digital Trainer for EE-3201 Program

Provides the "hands-on" experience you need for understanding digital devices and operations. Lets you do all the experiments in the Heath Digital Techniques Program, develop projects, build and test prototypes, verify circuit operation and check digital IC's. Has solderless breadboard sockets, four binary data switches, 2 "no-bounce" switches, 3-frequency pulse clock generator and 4 LED's. Also has +12 VDC @ 100 mA, −12 VDC @ 100 mA and +5 VDC @ 500 mA supplies. Accommodates up to eight 14 or 16-pin dual-in-line ICs, also 24, 28, and 40-pin DIPs. For 120 VAC, 60 Hz.

Kit ET-3200, Shpg. wt. 5 lbs. **79.95**

ETW-3200, Factory assembled, Shpg. wt. 6 lbs. **119.95**

Classroom Versions of our Electronics Learning Programs for School Courses and Industry Training



Student Text Contains Comprehensive Coverage of Course Materials, Self-Test Questions and Programmed Instruction Reviews

Student Workbook Contains Detailed Chapter Examinations Keyed to Text and Laboratory Experiments

Instructor's Guide Contains Complete Course Outlines, Objectives, and Guide to Final Exam Preparation

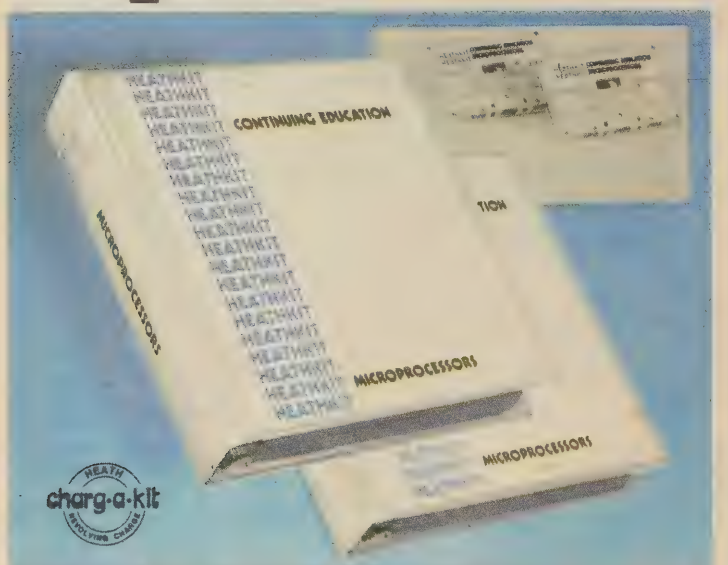
The famous Heathkit electronics learning programs have been completely reformatted for classroom use. Using the instructor's guide, the teacher can add to the information in the program material his own experience and guidance to give the student a fully rounded learning experience. The programs are ideal for classroom use in schools, industry seminars or adult education classes. They provide a very economical method of developing professional materials for classroom use. The programs are broken down into three separate publications for student and teacher convenience. The student text is the core of the learning material. The student workbook with its exams and laboratory experiments, is keyed to the text. The instructor's guide provides outlines to help present the material in an orderly fashion. Along with the publications, separate parts packages contain the electronic components needed to implement the workbook experiments. These parts are required for the experiments in the learning programs. To complete the experiments in DC and AC Electronics, Semiconductor Devices and Electronic Programs, the ET-3100 Trainer is required. For the Digital Techniques Program, the ET-3200 Trainer is required. Quantity discounts are available on the programs below. Free brochures are also available detailing the course objectives and outlines. Contact Heath Company for discount schedule.

Program	Text Shpg. wt. 2 lbs.	Price	Workbook Shpg. wt. 2 lbs.	Price	Instructors' Guide Shpg. wt. 1 lb.	Price	Parts Shpg. wt. 1 lb.	Price
DC Electronics	EB-6101	17.95	EB-6101-40	7.95	EB-6101-50	8.95	EB-6101-30	15.95
AC Electronics	EB-6102	17.95	EB-6102-40	7.95	EB-6102-50	8.95	EB-6102-30	9.95
Semiconductor Devices	EB-6103	17.95	EB-6103-40	7.95	EB-6103-50	8.95	EB-6103-30	9.95
Electronic Circuits	EB-6104	19.95	EB-6104-40	8.95	EB-6104-50	8.95	EB-6104-30	21.95
Digital Techniques (2 vols.)	EB-6201 (3 lbs.)	24.95	EB-6201-40	10.95	EB-6201-50	8.95	EB-6201-30	19.95

HEATHKIT CONTINUING EDUCATION

Microprocessor Self-Instruction Program

Learn Microprocessor Programming and Application Techniques





Includes a variety of microprocessor-oriented devices — IC's, op amps, RAM's — for "hands-on" experiments

This program covers microprocessor basics, computer arithmetic, programming, interfacing and much more. It assumes a knowledge of electronics equivalent to Heath's Digital Techniques Program.

If you're involved in scientific or electronic pursuits, microprocessors are becoming a way of life and a dominant factor in your success or failure. The EE-3401/ET-3400 self-learning program and accompanying computer trainer is the easy, effective way to learn about these powerful devices. The program uses Heath's proven self-instructional techniques including programmed instructions and audio-visual aids to teach computer programming, microprocessor operation, interfacing and related topics.

The microprocessor program is organized into 10 learning units as follows:

UNIT 1: NUMBER SYSTEMS AND CODES. Covers decimal, binary, octal, hexadecimal number systems; conversions and binary codes, positional notation.

UNIT 2: MICROCOMPUTER BASICS. Covers terms and conventions, computer words, executing a program, addressing.

UNIT 3: COMPUTER ARITHMETIC: Covers Binary addition, subtraction, multiplication and division; two's complement arithmetic; Boolean operations — AND, OR, Exclusive-OR, INVERT.

UNIT 4: INTRODUCTION TO PROGRAMMING: Covers branching, conditional branching, algorithms, additional instructions.

UNIT 5: THE 6800 MICROPROCESSOR — PART 1. Covers architecture, instruction set and addressing modes.

UNIT 6: THE 6800 MICROPROCESSOR — PART 2. Covers stack operations, subroutines, input-output (I/O) operations and interrupts.

UNIT 7: INTERFACING — PART 1. Covers interfacing fundamentals; interfacing with random access memory (RAM); interfacing with displays.

UNIT 8: INTERFACING — PART 2. Covers interfacing with switches; the Peripheral Interface Adapter (PIA); Using the PIA.

UNIT 9: PROGRAMMING EXPERIMENTS. Covers experiments with binary/decimal, hexadecimal/decimal, and straight line programs; arithmetic and logic instructions, branches, additional instructions, new addressing modes, arithmetic operations, stack operations and subroutines.

UNIT 10: INTERFACING EXPERIMENTS. Provides experiments with memory circuits, clock, address decoding, data output, data input, peripheral interface adapter, audio output, key matrix and parallel-to-serial conversion, digital-to-analog and analog-to-digital conversion.

Each unit is complete with introduction, unit objectives, activity guide, experiment, examination and examination answers.

The EE-3401 is complete with 62 electronic components required to complete the experiments. These components include two 2112 256x4-bit RAM's, 6820 PIA interface chip, 1406 digital to analog converter, 741 and 301 op amps and a variety of other microprocessor-oriented devices. The ET-3400 Computer Trainer, next page, is required for the experiments in the Microprocessor Course.

Upon completion of the program, if you choose to take the optional final exam, a passing grade of 70% or better earns you 8.0 Continuing Education Units and a Certificate of Achievement.

Program EE-3401, Shpg. wt. 12 lbs. **89.95**

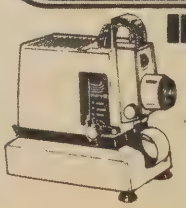
EE-3401-1 Slides. Optional 35 mm Slides duplicate the audio-visual flip charts in the EE-3401 program. Shpg. wt. 2 lbs. **60.00**

EE-3401-2 Filmstrip. Optional 35 mm Filmstrip duplicates the audio-visual flip charts in the EE-3401 Program. 1 lb. **20.00**

Save $9.95
$269.95

SAVE when you order the Microprocessor Course with the Trainer. If purchased separately, $279.90.

ETS-3400, Course and Trainer Together, Shpg. wt. 25 lbs. **269.95**



new Dukane 35 mm Filmstrip/Slide Projector

$80.00

- **Ideal for use with Program Slides Above**
- **3" lens and 300-watt lamp for sharp pictures**

Highly efficient silent slide/filmstrip projector ideal for classroom or individual use. Has color-coded focus, advance and framing levers, easily accessible lamp and lenses for easy cleaning.

AV-101, Shpg. wt. 11 lbs. **80.00**
AV-101-2, Dust Cover for AV-101. Shpg. wt. 5 lbs. **17.00**
AV-101-1, 2x2 Stack Load Slide Changer, Shpg. wt. 1 lb. .. **13.00**

Microprocessor Trainer and Accessory, BASIC Program

Microprocessor Trainer for EE-3401 Program lets you get "hands-on" computer experience

$189.95

- **Uses the popular 6800 microprocessor**
- **Built-in 1K ROM Monitor Program**
- **Breadboarding Socket for Prototyping**
- **17-Key Hexadecimal keyboard and LED display**

Functioning as a miniature digital computer, the ET-3400 Microprocessor trainer is essential for the experiments in the EE-3401 self-instruction program. After completing the program, the ET-3400 is ideal for breadboarding, prototyping and system design.

The ET-3400 features a built-in 1K ROM monitor program for controlling unit operation; 6-digit hexadecimal 7-segment LED display for address and data read-out; 17-key hexadecimal keyboard for entering programs and data. Has 256 bytes of random access memory (RAM) built-in, expandable to 512 bytes with the RAM's supplied in the EE-3401 program. Also has 8 buffered binary LED's for display of breadboard logic states, 8 SPST DIP switches for binary input to breadboard circuits, a breadboarding socket for prototyping, interfacing and memory circuits.

All microprocessor address, control and data busses are buffered and terminated on the front panel for ease of connection to prototyped circuits. There's also provision for a 40-pin external connector to extend memory and I/O capacity, Built-in +5, +12 and −12 volt power supplies.

Kit ET-3400, Shpg. wt. 7 lbs. 189.95

Factory assembled and tested version of above.
ETW-3400, Shpg. wt. 6 lbs. 240.00

Use with the EE-3401 program to learn the fundamentals of microprocessors, programming and interfacing



Trainer Accessory plugs into ET-3400 to give you real computing power

HEATH charg-a-kit REVOLVING CHARGE

NEW! for winter ● Microprocessor Trainer Accessory

Provides additional I/O and memory expansion for the ET-3400

Makes the Microprocessor Trainer into a complete, low-priced personal computer system. It provides an audio cassette interface so you can store programs on convenient cassettes and eliminate manual reloading each time you want to execute a program. It also provides an additional 1K bytes of memory so you can run longer and more sophisticated programs through the ET-3400. The memory can be expanded to 4K bytes with the optional 3K chip set (ETA-3400-1, order below). A serial I/O with EIA or 20 mA loop format provided in the ETA-3400 accessory lets you hook up a video terminal such as the H9. The new ROM monitor/debugger program provided with the accessory lets you implement the standard trainer monitor functions through the external terminal. Memory locations can be examined or changed, break points can be initiated, and program debugging can be accomplished with a single instruction step feature. A tiny BASIC interpreter is provided in ROM to let you do actual programming using the BASIC language. Connects to the trainer by means of a 40-pin ribbon cable supplied. Parts required to modify Trainer to work with Accessory are included. Since this modification changes the clock frequency of the Trainer, the experiments in the Microprocessor Program using timing loops will be changed. It is recommended that all the EE-3401 program experiments be completed before adding this modification kit. The accessory cabinet measures 11" W x 3" H x 12" D. For 110-130 VAC, 60 Hz. Available Mar. 1979.

Kit ETA-3400, Shpg. wt. 8 lbs. 150.00
ETA-3400-1, Optional 3K Chip Set. Shpg. wt. 1 lb. 47.00

NOTE: A terminal such as the H9 is required to use the new BASIC and monitor software. See page 74 for details on the H9.

Self-Instruction for Programming in BASIC — The Essential Computer Language



This BASIC self-instruction program will help you get the most benefit from your H8 or H11A computer system. It's easy and fun to learn, and gives you a thorough background so you can really accomplish creative programming!

$39.95

This program teaches you how to program your computer using the popular BASIC language. BASIC (Beginner's All-Purpose Symbolic Instruction Code) is essential for hobby and personal computing, it is also widely used in education and business. The course covers all formats, commands, statements and procedures plus the creative aspects of computer programming so you can make practical use of it in solving problems and creating your own unique programs.

The program is divided into 14 segments, each with its own review test, introduction and objectives. Subjects covered are: BASIC words, decision making, numbers, statements, functions, loops, lists and arrays, strings, programming techniques, programming tools, defining the program, step-by-step plans for writing a program, formating the program and improving the program.

Three appendices provide descriptions and playing rules for computer blackjack, a rundown of microprocessor number systems and codes, and an explanation of Benton Harbor BASIC and extended Benton Harbor BASIC. Also included are handy reference cards for Benton Harbor BASIC statements, ASCII number codes. BASIC direct command statements, a reference chart for math and Boolean algebra operations. A workbook provides programming instructions and experiments. While the BASIC program is keyed to Heathkit computers, it is equally applicable to any computer system using BASIC. An optional final exam (passing grade 70%) brings you a Certificate of Achievement and 3.0 Continuing Education Units.

EC-1100, Shpg. wt. 7 lbs. 39.95



Simulated TV Picture

Here's why Heathkit TV gives you MORE VALUE for your money!

There's Performance — Heathkit TV's are designed to offer the best performance in each price category — they use first class components like rugged fiberglass circuit boards for long life, sockets for IC's and transistors, precision resistors and capacitors, latest design picture tubes. They're engineered for reliability and quality throughout, and since you build them yourself, you have direct control over how well they're put together!

There's Savings — Because you build Heathkit TV yourself, you become familiar with each circuit and each component in the set. And the troubleshooting sections included in each manual are extensive enough to cover virtually every problem that may arise. Our color TV's even have built-in servicing instruments so you can do convergence, alignment, vertical and horizontal centering and make many other adjustments yourself. You can keep your set in peak condition year after year. And because you built it yourself, you can service it yourself. With the high price of repairs, that can be a **really** big savings.

There's Satisfaction — The kind of satisfaction that's built into every Heathkit color TV is a unique feature you simply won't find in an assembled TV. The knowledge that you have built one of the most advanced pieces of electronic equipment available will give you a feeling of pride and accomplishment words can hardly describe.

SPECIAL WARRANTY SERVICE PLAN FOR SOLID-STATE TV MODULES!

If a component proves defective during the 90-day warranty period, the modules will be serviced with no charge for parts or labor. If the problem is due to a construction error, the modules will be inspected and serviced at a charge of $5.00 per module. After the 90-day warranty has expired, the module service fee is $5.00 per module plus parts. All picture tubes warranted for two full years.

The Heathkit GR-2001- Color TV lets you program

The GR-2001 is one of the most sophisticated and versatile color TV's available anywhere, but it's also much more. It's the "heart" of a completely automatic total home viewing system — a fully computerized programmable color TV.

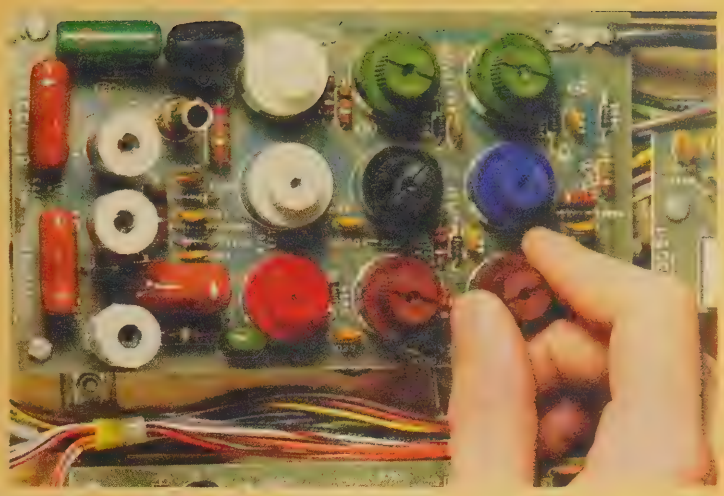
This computer TV system allows you to program your set for an entire evening's viewing, then just sit back and relax. The GD-1185 programmer then automatically changes to the right channel at the right time. You can even program the set to return to manual operation at a preselected time, then resume automatic operation at another time. And programming is easy too — the top bank of 8 keys accesses the memory and turns the on-screen clock display into a readout which lets you "see" your program as you enter it. The selected time appears in the first four digits of the clock display, the channel number in the last two. Simply enter the time at which you want the set to change channels, then enter the channel number you want. You can program up to 32 channel changes within two 12/24 hour periods!

The fully automatic antenna rotor system adds even more automated convenience — you can program the set to turn your antenna to the correct heading each time the GR-2001 changes channels!

To further automate the GR-2001 system, the GD-1184 antenna rotator control lets you rotate your antenna for the best reception on each channel — it's perfect for areas where stations are in widely separate locations. You can select up to 8 separate antenna headings with up to three stations per heading. It's the most convenient antenna-rotor system ever!



Comprehensive, fully illustrated assembly manuals take you step-by-step from unpacking your kit to plug-in. Check-off blanks by each step let you keep your place and follow the instructions for easy, organized kit assembly.



Famous Heath built-in self-service features let you keep the GR-2001 in perfect shape for years to come. A dot generator, centering and convergence circuits and a test meter help you really save money on service during the life of the set.



The on-screen digital clock displays the programming sequence in bright, easy-to-see 1" high digits. After programming, it functions as a clock displaying hours, minutes and seconds in 12 or 24-hour format.

The world's First Fully Computerized an entire evening's viewing!

With all this programming convenience, you also get a color TV that features our best color picture ever!

While the programmer and antenna-rotor make the GR-2001 system unique, the color TV itself really makes the GR-2001 system worthwhile! The GR-2001 is simply one of the best-performing color TV's you'll find anywhere. Dozens of circuit refinements and improvements combine for a picture that's vivid, accurate, bright and ultra-sharp. The 25" (diagonal) rectangular picture tube uses a black matrix screen for one of the best pictures ever. It's fully shielded to maintain outstanding color purity by eliminating stray magnetic fields. The phase-locked loop horizontal and vertical oscillators provide a picture so rock steady and adjustment-free we've eliminated conventional horizontal and vertical hold controls!

Even the audio circuitry has been improved to provide excellent sound.

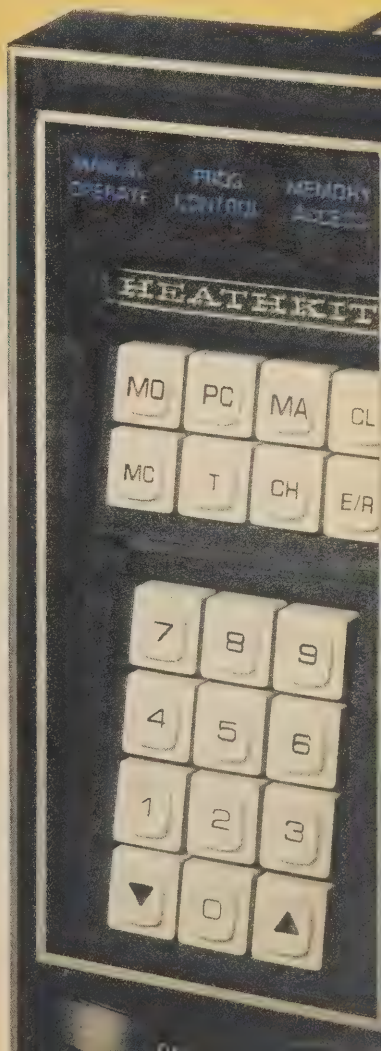
The GR-2001 gives you outstanding audio reception to go along with its outstanding picture. The sound signal has its own IF stage to provide a difference you can really hear — through the GR-2001's wide-range speaker or even more dramatically when you use the audio output jack to connect the GR-2001 to your stereo system. It's one of the first sets ever to give you real "hi-fi" sound from a TV! **So shop and compare — we think you'll find the GR-2001 color TV one of the finest television values around! Order from next page.**

GR-2001 SPECIFICATIONS: Deflection: Magnetic, 90°. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna Input Impedance:** VHF: 300Ω balanced or 75Ω unbalanced. UHF: 300Ω balanced. **Picture IF Carrier:** 45.74 MHz. **Sound IF Carrier:** 41.25 MHz. **Color IF Subcarrier:** 42.17 MHz. **Sound IF Frequency:** 4.5 MHz. **Video IF Bandwidth:** 4.08 MHz, at 6 dB down. **HI-FI Output:** Frequency response: ±1 dB, 50 Hz to 15 kHz. **Output voltage:** Greater than 1.0 V RMS. **Audio Output:** 4Ω or 8Ω. 2 watts. **Power Requirements:** 110 to 130 volts AC, 60 Hz, 200 watts. **Net weight:** 112 lbs.

Eight programming pushbuttons let you sequence the GR-2001 to change channels and rotate your antenna at times you preselect! Above the pushbuttons, backlit nomenclature shows the current operating mode of the programmer.

Random Access tuning keyboard lets you instantly choose any of up to 16 preselected stations. You can switch from VHF to UHF, up or down, in any sequence and be tuned in instantly, without switching between channels. An optional accessory (GRA-2001-9) lets you add up to 8 additional channels for a total of 24.

The "instant" on-off switch is defeatable to save energy when the GR-2001 is off for longer periods of time. All primary controls are hidden behind a front panel door for easy access. Most of the control circuitry is located on the slide-out chassis drawer for easy service and adjustment should the need arise.



"The programmer puts you into the real avant garde of TV fanciers. Add this option and you will never again miss a desired program because you forget to turn the channel on in time. The computer memory does all your remembering and automatically chooses the right channel at the right time."

Budget Electronics, Jan. 1978

"The programmable automatic channel selection feature really caught our eye. This one feature sets this set aside from all the others on the market."

Radio Electronics, May 1977



Heathkit GR-2001 25" (diagonal) Color TV Kit

Even if you order it without the options below, it's still one of the finest sets you can buy anywhere! Less cabinet, order your choice of fine-furniture cabinets at right. Includes chassis, picture tube, one speaker.

Kit GR-2001, Shpg. wt. 146 lbs. 699.95

Second Speaker for GR-2001. Fits in space on GR-2001 cabinets where indicated. Includes all cables. **GRA-2000-7,** Shpg. wt. 2 lbs. 8.95

8-Channel Accessory for your GR-2001

Adds 8 more channels to the GR-2001's random-access tuning system (a total of 24 channels) for even greater versatility. **Kit GRA-2001-9,** Shpg. wt. 1 lb. ...9.95

GD-1185 TV Programmer

Automatically changes channels at any time you select — up to 16 changes in either of two switch-selected 12/24-hour periods. Front-panel keyboard and on-screen readout make it easy to enter any time or channel you want. It's the ultimate in convenience — and a Heathkit exclusive! Requires GRA-601 Clock below for operation. **Kit GD-1185,** Shpg. wt. 8 lbs. 159.95

Automatic Antenna Rotor Control

Automatically rotates your antenna to preselected directions for the best reception on each channel. Accepts up to 3 channels for each of 8 directions. Operates with or without GD-1185 above. For use only with existing Cornell Dubilier AR-40 rotor system (Heath GDP-1176 or GDP-258) or optional motor below.

Kit GD-1184, Shpg. wt. 6 lbs. 59.95

GDA-1184-1, Rotor Motor. Requires 5-wire cable (not supplied). 11 lbs. ...34.95

Easy-to-build On-Screen Digital Clock

Displays the time in hours, minutes and, if desired, seconds in 12/24 hour format below the channel number. Easy-to-read white digits can be adjusted with the channel numbers to remain on the screen for up to 1½ minutes each time the channel is changed, remain on permanently or automatically reappear at approximately 2-minute intervals. **Kit GRA-601,** Shpg. wt. 1 lb. 29.95

Convenient Hand-held Remote Control for the GR-2001. Lets you adjust volume, turn the set on or off, adjust tint, scan up or down, even turn the optional programmer on or off — all from the comfort of your easy chair. Operates to 20-ft. away from set.

Kit GRA-2001-6, 4 lbs. 89.95



SAVE $54.90 on GR-2001 System with Programmer and Clock

Consists of GR-2001 Color TV, GD-1185 Programmer and GRA-601 On-Screen Digital Clock. If purchased separately, $889.85. Order optional cabinet below.

GRS-2001, Shpg. wt. 175 lbs. Motor Freight 834.95

SAVE $64.85 on GR-2001 with Programmer, Clock, Rotor Control

Consists of GR-2001 Color TV, GD-1185 Programmer, GRA-601 On-Screen Digital Clock, and GD-1184 Automatic Rotor Control (less motor). If purchased separately, $949.80. Order optional cabinet below.

GRS-2002, Shpg. wt. 187 lbs. Motor Freight 884.95

Fine-Furniture Cabinets for your GR-2001 or GR-2000 Color TV

Simulated TV Pictures



1 2 3 4 5

1 Contemporary cabinet. Dual speaker capability. Comes completely assembled and finished. Constructed of solids and veneers; oiled walnut finish. 28⅜" H x 46¹³⁄₁₆" W x 20⅜" D (23⅝" D including cup).

GRA-602-25, Shpg. wt. 66 lbs. Motor Freight 179.95

2 Compact contemporary cabinet. Solidly constructed of wood solids and veneers, beautifully finished in luxurious oiled walnut finish. Comes fully assembled with cut-out for one speaker. Measures 34⅜" H x 33⅞" W x 20⅝" D (24⅛" D including cup.) Shpg. wt. 65 lbs.

GRA-608-25, Motor Freight 149.95

3 Mediterranean cabinet with doors. Accepts 2 speakers. Constructed of solids & veneers; simulated wood-grain base & trim. Dark oak finish. Hardware finished in Windsor Antique Gold tone. Fully assembled, finished. 29⅜" H x 48¹⁵⁄₁₆" W x 23" D. (26¼" D including cup). Shpg. wt. 108 lbs.

GRA-605-25, Motor Freight 269.95

4 Early American cabinet. Twin speaker capability. Distressed maple finished wood solids & veneers; simulated wood-grain trim. Hardware has Windsor Antique Gold finish. Fully assembled & finished. 31¾" H x 47¹³⁄₁₆" W x 20½" D. (23¾" D including cup). Shpg. wt. 83 lbs.

GRA-603-25, Motor Freight 199.95

5 Mediterranean cabinet. Accepts 2 speakers. Crafted of solids & veneers; simulated wood-grain trim. Dark oak finish. Hardware features Antique Gold finish. Fully assembled and finished. 30¾" H x 49¹⁵⁄₁₆" W x 20⅞" D. (23¹⁵⁄₁₆" D including cup.) Shpg. wt. 82 lbs.

GRA-604-25, Motor Freight 189.95

"The picture obtained on the GR-2000 can only be described as superb. The Black (Negative) Matrix CRT, the tuner and i-f strip, and the video amplifier provide a picture equal to that of many studio color monitors."

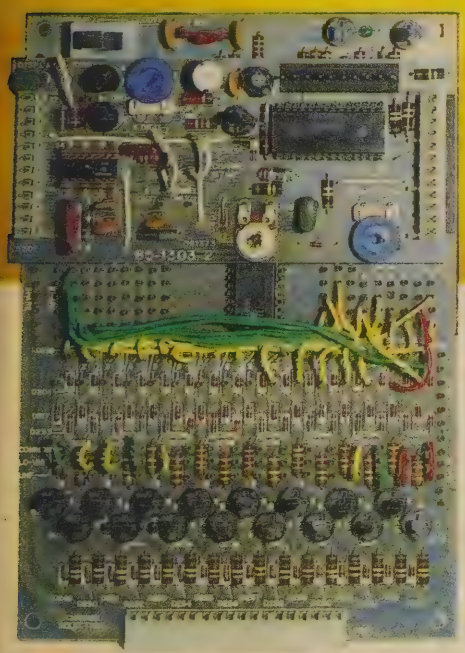
Popular Electronics, April 1974

"Constructing the GR-2000 is made up of simple tasks... anybody who can follow instructions, solder and use wire cutters is capable of building himself a great television set."

Mechanix Illustrated, December 1974



Simulated TV Picture



The "heart" of the GR-2000 is the channel selector circuit board. It provides the direct electronic tuning, the dot generator for color alignment, and positions and controls the channel display.

HEATH charg-a-kit REVOLVING CHARGE

Heathkit GR-2000 25" Diagonal Color TV offers outstanding performance and value

$599.95

Total electronic tuning convenience! Simply touch a button on the front panel (or the optional remote control) and the sophisticated programmable digital counter sweeps up or down through any 16 pre-selected stations. And because the tuning is electronic, you eliminate noisy, unreliable turret tuners. Even the channel numbers are displayed electronically, right on the screen. The large, white digits can be positioned anywhere on the screen. They can be adjusted to remain on the screen for up to 1½ minutes, or permanently if you choose. And you can recall them by changing the channel or by tapping the Volume on the optional remote control.

A 25" (diagonal) color picture second to none! Critics and owners have praised the GR-2000 for a bright, accurate color picture that seems to make programs "come alive". The picture tube provides outstanding brightness and sharpness thanks to its negative matrix and fully-illuminated phosphor dots.

Revolutionary electronics! The GR-2000's circuitry is some of the most sophisticated in the industry. It was the first TV to utilize a fixed IF filter which virtually eliminates adjacent-channel interference — especially important in urban areas crowded with stations. This advanced filter provides ideally-shaped bandpass and — unlike the "traps" used in most sets — it never requires alignment. And the GR-2000 uses other advanced circuitry to assure superior performance — improved signal circuits for greater clarity and definition, DC-controlled contrast for reduced interference, an integrated circuit color amplifier for more precise, realistic tints, and an IC automatic gain control for excellent sensitivity, selectivity and noise rejection. You get a consistently excellent picture year after year. And the audio portion of the GR-2000 gives you great sound too, especially if you use the hi-fi output jack to connect it to your stereo system.

Easy and fun to build! The completely illustrated assembly manual makes it easy to feel the pride of "building it yourself." Almost all the circuitry mounts on plug-in printed circuit boards and factory-fabricated wiring harnesses minimize point-to-point wiring. There's even a test meter (included) so you can check your progress each step of the way.

Save money on service! Because you build the set, you can service it. All the circuitry you need is built in — a digital-design dot generator, circuits for purity and convergence adjustments, vertical and horizontal centering circuits and a test meter. Much of the circuitry is accessible by pulling out the service drawer. You can keep your set in peak-performing condition with less expense.

Optional accessories make your set even more enjoyable! The optional Clock Module adds the time to the on-screen channel readout. The time appears in 1" digits beneath the channel and the clock can be set for 4 or 6-digit readout in 12 or 24-hour formats.

The optional remote control provides wireless selection of the channel, volume, tint, color intensity — it even turns the set on and off!

You can custom-mount your GR-2000 in a wall or your own installation, or you can order one of our fine-furniture cabinets from page 92.

And, if you want the incomparable performance of the GR-2000 in a more compact cabinet, look at the GR-2050 on the next page. It uses exactly the same chassis but with a smaller 21" (diagonal) screen.

Kit GR-2000, Shpg. wt. 147 lbs. Motor Freight **599.95**

Optional Digital Clock for GR-2000.
Kit GRA-601, Shpg. wt. 1 lb. **29.95**

Remote Control for GR-2000.
Kit GRA-2000-6, Shpg. wt. 4 lbs. **89.95**

Second Speaker for GR-2000. Fits in space on GR-2000 cabinets (where indicated). Includes all cables. **GRA-2000-7,** Shpg. wt. 2 lbs. **8.95**

GR-2000 SPECIFICATIONS: Picture Tube: 25" (diagonal). **Viewing Area:** 315 sq. in. **Deflection:** Magnetic, 90 degrees. **Antenna Input Impedance: VHF:** 300 Ω balanced or 75 Ω unbalanced. **UHF:** 300 Ω balanced. **Tuning Range:** TV channels 2 through 83. (Preset any 16). **Hi-Fi Output: Output Impedance:** 2000 Ω. **Frequency Response:** ±1 dB, 50 to 15 kHz. **Harmonic Distortion:** Less than 1% at 1 kHz. **Output Voltage:** greater than 1.0 V rms. **Audio Output: Output Impedance:** 4 Ω or 8Ω. **Output Power:** 2 watts. **Mounting Dimensions:** 20⅛" H x 29⅛" W x 21¾" D. **Power Requirement:** 110 to 130 volts AC, 60 Hz, 200 watts. **Net Weight:** 112 lbs.

Popular-size TV's Recorder and Accessories



HEATH charg-a-kit REVOLVING CHARGE

GR-2050 21" Diagonal Measure Color TV Kit

Offers the same fine features and specifications as the GR-2000, but in the popular 21" Screen Size

See GR-2000 description on page 93. Dimensions, 19" H x 27½" W x 19" D.

Kit GR-2050, with chassis, picture tube, one speaker. Shpg. wt. 122 lbs. Motor Freight 549.95
GRA-2050-1, Contemporary Cabinet, Shpg. wt. 74 lbs. Motor Freight 149.95
Kit GRA-2000-6, Optional Remote Control, Shpg. wt. 4 lbs. 89.95
Kit GRA-601, Optional On-Screen Digital Clock. Shpg. wt. 1 lb. 29.95



simulated TV pictures

Small Screen TV with Outstanding Features and Performance!

Both the GR-500 and GR-400 feature precision in-line gun color tubes with negative matrix screen for outstanding contrast and brightness. Have on screen channel display, automatic fine tune, instant-on, hi-fi output jack, and speaker defeat switch.

Kit GR-500, less cabinet, 19" Diagonal Measure, Shpg. wt. 99 lbs., UPS 499.95
GRA-500-1, walnut veneer table model cabinet (main illustration), 17¼" H x 25½" W x 14" D (17" D including cup), Shpg. wt. 28 lbs., UPS 44.95
GRA-403-18, roll-around cart. 22" H x 27" W x 15⅝" D, Shpg. wt. 17 lbs., UPS ... 21.95
GRA-601, Digital Clock Accessory, Shpg. wt. 1 lb. 29.95
LAST CALL on our compact GR-400 Color TV. 17" Diagonal measure color TV set has the same fine features as the GR-500 above.
Kit GR-400, (less cabinet), Shpg. wt. 104 lbs. UPS 449.95
GRA-400-1, Fully Assembled. Walnut-Veneer cabinet for GR-400. (16⅜" H x 24⅛" W x 12¾" D), 15¾" including cup. Shpg. wt. 26 lbs. UPS 39.95



1 NEW Fully Assembled Sony Betamax Video Cassette Recorder Now with Built-in Timer and Three-Hour Recording Capability

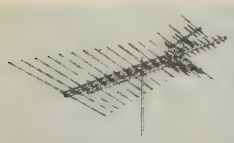
Here's the newest Sony Betamax videorecorder you've heard so much about, and now with its built-in timer, it's even more versatile! You can record shows as you watch them, record from a different channel than the one you're watching, or with the timer, even record a show while you're away! Just set the timer to turn on and start the machine when you're not there. It will record and shut itself off automatically, and when you return, you can watch your program! It even includes a remote pause/start control so you can hold recording during commercials or pauses and restart it right from your easy-chair. Uses the new 3-hour as well as standard 2-hour video cassettes which can be erased and used over and over again. The Betamax hooks up easily to any color or black-and-white TV.

GDP-8600, Shpg. wt. 45 lbs. Motor Freight 960.00
GDA-1230-2, 2-Hour Videocassettes. Shpg. wt. 1 lb. ..... each 16.95
GDP-8601, 3-Hour Videocassettes. Shpg. wt. 1 lb. ..... each 20.95

2 NEW! Sanyo VC-1600X High-Sensitivity Video Camera. High-resolution black-and-white TV picture ideal for security and surveillance uses. Can also make tapes when used with a VCR with video input. Excellent for use in businesses, stores, anywhere remote monitoring is effective. With 50-ft. cable and connectors. For 117 VAC, 60 Hz. Fully Assembled.
GDP-1850, Shpg. wt. 20 lbs. 249.95
GDP-1852, Mounting Bracket for Camera. Shpg. wt. 2 lbs. 19.95

3 NEW! Sanyo VM-4209 High-Performance Video Monitor. Use with camera above for an outstanding monitoring and security system. Has 9" diagonal viewing area, high-resolution black-and-white picture. Rugged steel cabinet, 8¾" W x 9⅜" H x 9¾" D. For 117 VAC, 60 Hz.
GDP-1851, Shpg. wt. 6 lbs. 179.95
COMBO OFFER — SAVE $49.95! Camera and Monitor Together. With all cables and connectors. If purchased separately, $429.90.
GDS-1850, Shpg. wt. 34 lbs. 379.95

Antennas and Accessories designed to give you better, sharper TV pictures



"Super Antenna." 60-element VHF-UHF-FM has 171" boom and 109" turning radius. Includes removable FM blocking elements. Less mast and cable. Motor Freight.
GD-1461, 300 ohms, Shpg. wt. 17 lbs. 79.95
GDS-1461, 75 ohms, Shpg. wt. 34 lbs. 84.95
"Deluxe Fringe Antenna." 131" boom, 80" radius.
GD-1441, 300 ohms, Shpg. wt. 10 lbs. UPS 39.95
GDS-1441, 76 ohms, Shpg. wt. 42 lbs. UPS 44.95



Cornell-Dubilier Rotor System. Consists of control box and rugged outdoor rotor for dramatically improved color and black-and-white TV, FM and stereo FM reception in most any area. The perfect match for your GR-2001 Television and optional GD-1184 Rotor control. Let your GD-1184 automatically control the GDP-1176 for optimum viewing enjoyment. Heavy-duty 1 rpm rotor has positive automatic stop, instant reverse. Supports antennas to 150 lbs. Lower mast clamp accepts ⅞" to 2" dia. masts. Has solid-state control box for year after year reliability, 360° rotor control, plugs into AC outlet. Installation is quick and easy. Requires 5-wire cable (not supplied).
GDP-1176, Shpg. wt. 14 lbs. 59.95



75/300 Ohm Transformer-Splitter
Matches one 75 ohm coax cable to separate 300 ohm VHF and UHF leads. Has extremely low loss and is perfect for use with home cable TV installations. Using 75-ohm coax cable helps improve TV reception by reducing interference. Also permits using longer hookups because of low signal loss. 82 channel. Has no-strip pre-attached leads for extra convenience and ease in setting up.
GD-298, Shpg. wt. 1 lb. 4.95



CB Trap Filter
Cuts out unwanted CB interference to give you improved picture quality. Connects directly to TV antenna terminals on your set. 300 ohm impedance. No assembly is required.
GD-1239, Shpg. wt. 1 lb. 6.95



Matching Transformer. Converts 300 ohms to 75 ohms for coax. Use with your GD-1461 or GD-1441 to convert them to 75 ohm coax down-lead. Very low loss. 82 channel.
GD-1054, Shpg. wt. 1 lb. 3.95

Coax Cable. 100 feet of high quality low loss RG-59U coax cable. Use in conjunction with GD-298 and GD-1054. Comes complete with antenna boot and connectors (installed). Long life, weather resistant. Needs matching transformers at both ends.
GD-328, Shpg. wt. 4 lbs. 10.95

Unusual and Exciting Products At Low Heath Prices!



1 Deluxe 10-Level Chess Challenger

Each playing level varies the computer's response time, i.e., expert — 11 minutes; advanced — 6 minutes, etc. The computer analyzes as many as 3,024,000 chess positions to make the best response. Random selection varies moves from game to game for continually fascinating and challenging play! You can even change levels of play at any time during the game! Has moves for pawn promotion, en passant capture, castling — will not make or permit illegal moves. In handsome solid-walnut case. Includes carved wood, magnetized French chess pieces. For 120 VAC, 60 Hz. Fully assembled.

GD-1292, Shpg. wt. 7 lbs. **199.95**

LAST CALL! Three-Level Chess Challenger. Similar to GD-1292, with three levels of play.
GD-1248, Shpg. wt. 6 lbs. **Was 199.95 Now 149.95**

2 Checker Challenger with four levels

Features 4 levels of play from basic to expert, random computer responses that vary every game, selection of offense or defense, verification of checker positions. For even more fun and excitement, you can change levels of play during the game! You can also set up problem situations for the computer to solve. Has keyboard entry of moves, digital display. Includes computerized board and checker pieces. For 120 VAC, 60 Hz. Fully assembled.

GD-1256, Shpg. wt. 5 lbs. **Was $129.95, Now 99.95**



new Smoke Alarm with Remote Detector

This new First Alert™ Smoke Alarm Center is an AC-operated device that incorporates a built-in radio receiver. Place it anywhere that's convenient. Then simply hookup as many of the compact Remote Signalling Detectors as you need for complete housewide protection (range is 50 to 100 ft.). The remote detector sends a signal that sets off the alarm center's horn. The entire system is completely wireless — no bothersome connections. The remote transmitting alarms are battery operated (battery supplied). Transmitter is FCC type approved. Fully assembled and tested.

GDP-1423, Center, 1 Detector, 4 lbs. **79.95**

Extra Wireless Remote Smoke Detector.
GDP-1424, Shpg. wt. 2 lbs. **39.95**



new Gas Detector with Electronic Horn

First Alert™, the same people who bring you the best-selling smoke detectors, have developed an equally important home warning system — the gas detector. This gas detector gives early warning of leaking propane or natural gas to allow you plenty of time to find the leak or clear the area. It's an especially important device for mobile homes, R-V's, trailers, campers, any household that uses natural or propane gas for any use. Emits a shrill piercing noise that is distinctly different from a smoke detector, so if you're using both units, you'll know which is which. Small enough for easy installation anywhere. For 120 VAC, 60 Hz. U.L. listed.

GDP-1425, Shpg. wt. 2 lbs. **39.95**



Bally® Electronic Home Pinball Computer Kit for years of family fun

Here's the world-famous, computer-controlled Bally pinball machine in easy-to-build, money-saving kit form from Heath. Features automatic scoring and a computer synthesizer that plays seven different tunes when extra scores or bonuses are won. The computer memory keeps track of up to four players and displays scores automatically. Ball return and bonus balls are also automatic. Has "Thumper Bumpers," "Sling-Shots" and player-controlled flippers, "skill" control for beginner or advanced playing levels. For 120 VAC, 60 Hz.

Kit GD-1110, Shpg. wt. 166 lbs., Motor Freight **599.95**



All-Purpose Digital Readout Thermometer

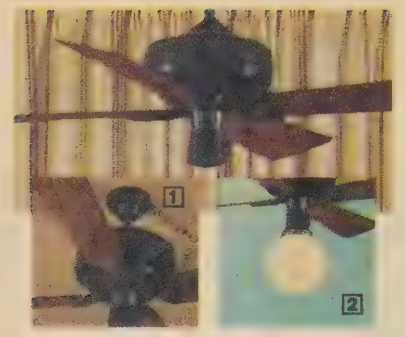
Provides temperature readout over a range from 32°F to 212°F (or switch to read 0-100°C in 1/10 degree increments. Power is supplied by a standard 9V battery. A flashing decimal point provides a low battery warning. Fully assembled. Less battery.

GD-1226, Shpg. wt. 2 lbs. **39.95**

Visit your Heathkit Electronic Center (Units of Schlumberger Products Corporation) and see our Complete Product Line.

Parts and service available. (Retail prices on some products may be slightly higher.)

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Los Angeles, 90007
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Authentic Heathkit Casablanca® Ceiling Fan

$99.95

- **Money saving kit-form**
- **Adjustable speed**
- **Whisper-Quiet**

The decorative way to keep heating costs down, and assure your comfort for all seasons. Brings whisper-quiet cooling to your home for just pennies a day. Can also be used to bring heat down from high ceiling areas during heating season. With its fan motor done in a warm baked bronze enamel, the GD-1238 features chain pull switch operation, variable speed adjustment from 145 to 180 rpm, and 52 inch blades (tip to tip). For an even more charming effect add the optional Lamp or Swag-Chain kits. Fan and optional lamp can be operated independently.

Kit GD-1238, Shpg. wt. 24 lbs. **99.95**

Slow-Speed Accessory. Lowers fan speed to 50-100 rpm. Ideal for smaller rooms, lower ceilings. **GDA-1238-3,** 1 lb. **14.95**

[1] **Swag-Chain Kit.** Mount your Casablanca fan most anywhere. Includes: 18′ antique brass swag chain, gold electrical cord, hardware. **GDA-1238-1,** 3 lbs. **14.95**

[2] **Light Kit.** Adds old world charm and dual purpose to your fan. Includes glassware, glassware holder and mounting accessories. **GDA-1238-2,** 3 lbs. **15.95**



Deluxe FM Wireless Intercom brings you clear voice communications

$44.95

Operates through your present house wiring

Here's a two-way intercom you can use anywhere indoors — as long as the units are on the same AC power transformer. Simply plug each unit into an AC outlet and you're ready to communicate. Order as many as you like for complete communications — solid-state circuitry consumes so little power you can even leave them on all the time at very low cost. Phase locked loop circuitry provides quiet, clear operation. Automatic squelch assures noise-free operation; a pleasant call tone alerts other units. A dictate switch locks the intercom in the "talk" mode for hands-free operation. A transmit indicator lights when the unit is in the talk mode. 3" speaker. Plastic cabinet, 8⅝" W x 3" H x 5¾" D, may be wall mounted.

Kit GD-1114, Shpg. wt. 3 lbs. **44.95**

GD-1114 SPECIFICATIONS: Power Requirement: 120 VAC, 15 volts, 60 Hz. **Power Consumption:** (standby), less than 2 watts; (talking), less than 5 watts. **Switches:** Talk, Call, Dictate. **Controls:** Volume and Squelch. **Audio Output Power:** 700 mW with less than 10% total harmonic distortion.



NEW This room-size Electronic Air Cleaner will help you maintain a healthy home

$179.95

An important and healthful addition to any household — EVERYONE feels better when air is clean and odor free!

Removes dust, dirt and pollutants from any room in your house, and it cleans and refreshes the air while doing so. All for just pennies a day! Ideal for tightly insulated and sealed homes where air can get "stale" after parties, smoking, etc. Has coarse filters at the air intake for larger particles; a charcoal filter for most household odors; and an electrostatic collector for smaller particles. A variable speed control adjusts from approx. 100 cfm (cubic feet per minute) to 250 cfm — lets you "quick-clean" a room, then turn back the speed to maintain a fresh air level. The removable charcoal filter needs periodic replacement (order below) the other filters are removable and easy to clean. The highly efficient power supply and variable speed fan control are fully assembled. There's absolutely NO SOLDERING! The fully assembled particle-board cabinet has a Southern-Pecan vinyl finish to blend with any decor. For rooms up to 20′x30′. 26½" H x 17¼" W x 13" D. For 120 VAC, 60 Hz.

Kit GD-1247, Shpg. wt. 56 lbs. **179.95**

GDA-1247-1, Set of 4 Casters for easy portability. 1 lb. **8.95**

GDA-1247-2, Replacement Charcoal Filter. 2 lbs. **5.95**

handy index

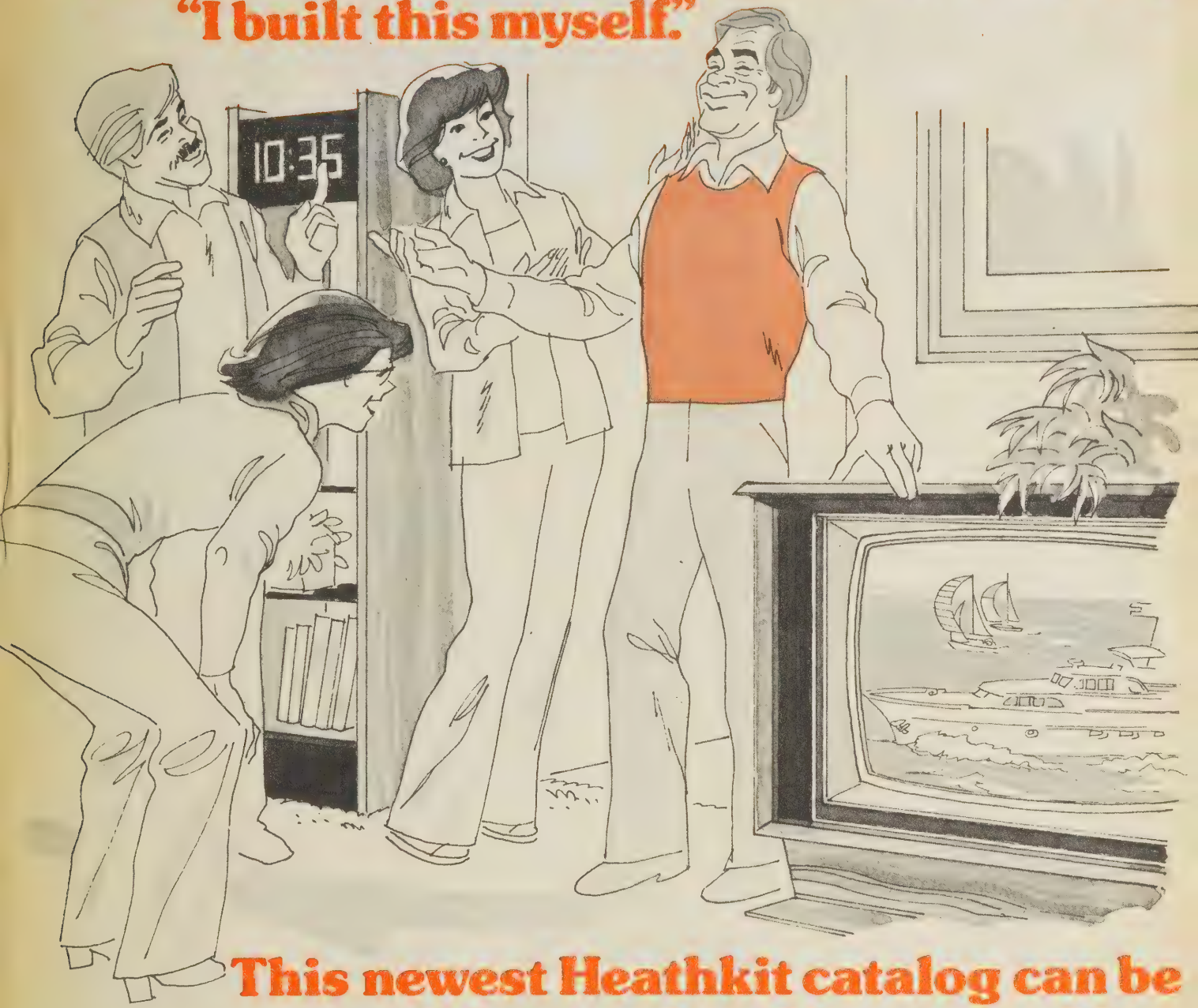
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This newest Heathkit catalog can be your ticket to a lot of hero worship

This newest Heathkit Catalog is a happening. And not just because it happens to be free. As a matter of fact, this Catalog is priceless, because it's filled with all kinds of sensational electronic projects . . . for everybody. For hobbyists. And for professionals. For youngsters and not-so-youngsters. For super sophisticates. And for people who have discovered that building anything themselves is super.

What kind of products will *you* find in our newest Catalog? Every kind. For TV viewing, in bright, sharp color. For making music, and listening to it. For learning and experimenting and for home improving. And we have special interest products for flying, boating, driving or fishing.

They're the kind of top quality, top value products you'll enjoy using and owning . . . the kind that will give you that great feeling when you say, "I built it myself."

So why hesitate . . . we've promised that you can build any kit in this catalog easily and successfully. And to have the chance to prove we're right, for a limited time we're offering a big 10% discount for up to $100 savings on your first Heathkit project. Take advantage . . . select your kit, clip out your 10% savings certificate, fill in the special Amateur Radio Discount order form, and send them . . . today! After all, a little honest adulation from family and friends never hurt anyone.

SAVE 10%

This special Radio Amateur Discount saves you as much as $100 on any kit purchase you make in the next 30 days!

It's our way of saying "we're behind ham radio all the way!" and it's a good way to see that your ham shack boasts some of the finest gear on the market!

(SEE FRONT COVER FOR FULL DETAILS)

SAVE $10.00... $20.00...$30.00... up to $100.00 when you order a kit from this catalog!

Mail your order today!

10% Amateur Radio Discount!

SAVE

HAMS–ORDER TODAY AND SAVE UP TO $100!

You must use this SPECIAL AMATEUR RADIO DISCOUNT ORDER FORM to get your 10% off. See ordering instructions.

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ORDERING INSTRUCTIONS

1. Do *not* include money for Shipping Charges and insurance if *any* item on this order is marked "Motor Freight" in the catalog. In this case, *all* items will be sent freight collect.
2. To open a charge account, fill in the application on the back of the inside catalog order form and enclose it with this order form.

Name _____

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State _____ Zip [ ][ ][ ][ ][ ]

843-430

QUAN.	MODEL NUMBER	KIT DESCRIPTION	WT.	PRICE EACH	TOTAL PRICE	Shpg. Charges*

Check Payment
Check one

- ☐ **CASH** Please send check or money order only
- ☐ **COD** Include 20% deposit plus 85¢ COD fee (Minimum order $10)
- ☐ **CHARGE** Check one VISA ☐ or ☐ Heath Revolving Charge ☐ (see #2 above)

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UP TO $100 OFF

HEATHKIT AMATEUR RADIO
SPECIAL DISCOUNT

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on any kit purchase up to $1000 from this catalog

This certificate must accompany your order.
Offer valid for mail-order kit purchases from this catalog or for kit purchases from your Heathkit Electronic Center
(Some retail prices may be slightly higher.)

UP TO $100 OFF

UP TO $100 OFF

UP TO $100 OFF

and it's only the icing on the cake!

WP-181

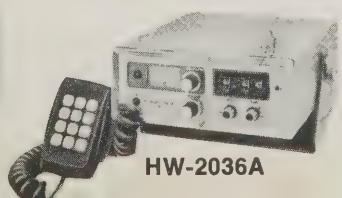
That's right...this special discount is just a sweetener to help you fellow Hams know the satisfaction of building and working the best Ham gear values in Amateur Radio. You'll learn first-hand why Heathkit Amateur Radio Equipment has been the value standard of the industry since 1952. You'll see how it's designed to get you "on the air" fast and easy and perform to specifications that are some of the best in the industry.

We know that once you build your first piece of Heathkit station gear you'll join the ever-growing ranks of satisfied Heath Hams for as long as you're on the air...and that's worth the discount to us. Of course, you may want to use your discount to purchase a color TV, computer system, or maybe one of our fine instruments. Whatever — you'll find Heathkit quality, performance and value in every one of our nearly 400 kit products...everything that's new and exciting in electronic kits. Not the least of your benefits will be the sheer enjoyment of constructing a Heathkit product using the clearest, easiest-to-understand and follow instructions in the world.

So go ahead — pick out your kit and send us your order today. Attach the 10% (up to $100) discount certificate above. It's good for 30 days only from receipt of this catalog. So take advantage and place your order today!



SB-221



HW-2036A

VF-2031





HW-8



HW-101

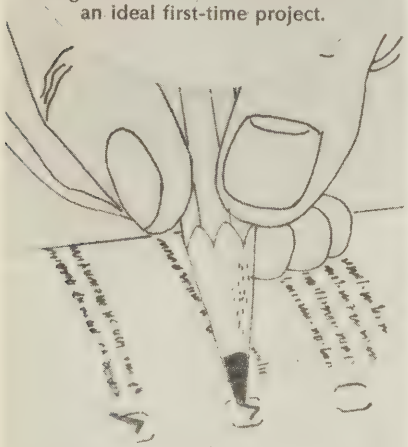


HD-1410

HERE'S HOW EASY IT IS TO BUILD YOUR FIRST HEATHKIT PROJECT



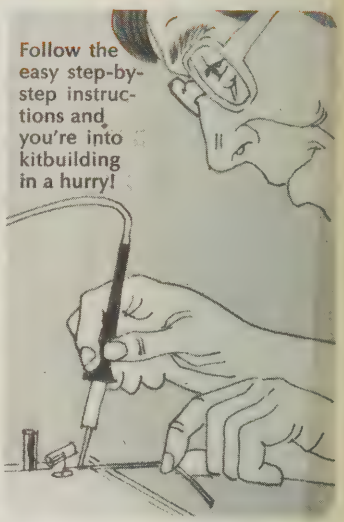
Select any kit you like from this catalog. One of our low-priced digital clocks like the GC-1107 is an ideal first-time project.



Check off each step as you go — boxes are provided in the manual for this purpose.



Unpack and organize the parts. The manual shows you how with clear, detailed illustrations.



Follow the easy step-by-step instructions and you're into kitbuilding in a hurry!



Plug it in and experience the unique pride and satisfaction that's a part of every Heathkit product.



You now have a quality piece of electronic equipment that you've built yourself. It's easy and fun!

GET STARTED NOW! ORDER YOUR FIRST KIT AND REMEMBER...

"We won't let you fail"...

All of our kits have been built by people just like you — they've been tested and we know they'll perform. And if you do need help, it's just a letter or phone call away!

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Heathkit products are known world-wide for quality, performance and VALUE. And no matter what your interest — there's a kit that's just right for you. Every Heathkit product comes with a thorough step-by-step assembly manual that leaves nothing to chance, and all our kits are backed by our famous "We won't let you fail" pledge. See all the exciting electronic products YOU CAN BUILD YOURSELF right here in this catalog.



New Electronic Circuits Course
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New High-Performance Stereo Components
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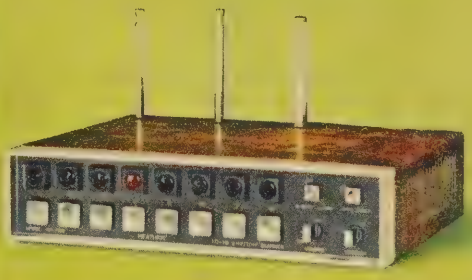


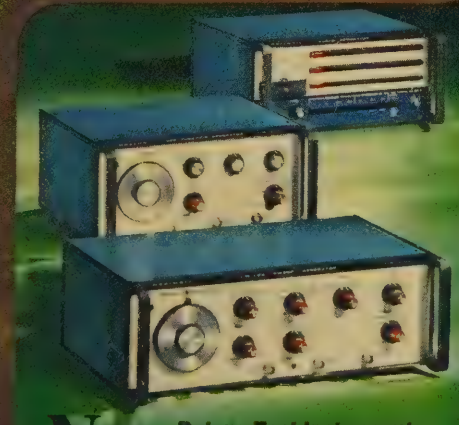
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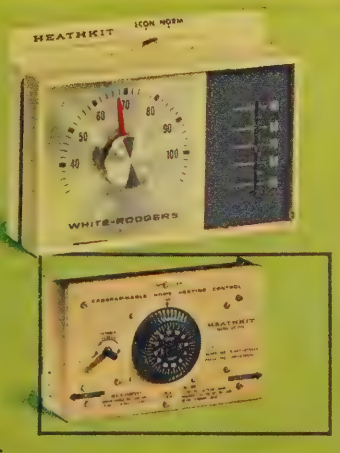
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New 3-Band VHF-UHF Automatic Scanning Monitor
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New Deluxe Test Instruments
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New Programmable Home Heating Control
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New Amateur Radio Course
See page 95



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HEATHKIT RETAIL CATALOG 815R

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Action-packed Heathkit Automatic Scanning Monitors

GR-1132 3-Band VHF/UHF Monitor

Tune in ALL the action with the GR-1132! Lets you monitor fire calls, police, ambulances, Amateur 2-meter FM, marine emergency vehicles, gov't weather stations, more. Covers any combination of 8 channels in the 30-50 MHz and 146-174 MHz VHF bands, and the 450-500 MHz UHF band. It automatically scans each channel, stopping on any signal, then resumes scan after broadcast. Priority feature — checks priority channel every 4 seconds even when locked on another channel and overrides if there is activity on the priority channel. 4-pole crystal filter (for even better selectivity in crowded signal areas, order the optional 8-pole filter, right); channel lockout buttons; extra-large lighted channel indicators. Telescoping antennas for each band, provision for external antenna. Built-in speaker, volume and squelch controls, manual channel selection too. AC and 12 VDC power supplies. Rugged walnut-grain metal case. Easy kit assembly, easy no-instrument alignment. Order crystal certificates below at right.

Kit GR-1132, Shpg. wt. 9 lbs. **149.95**

GR-1132 SPECIFICATIONS: **Scanning Range:** LO-VHF, any 10 MHz segment of 30-50 MHz frequency range. Hi-VHF, any 8 MHz segment of 146-174 MHz frequency range. UHF, any 8 MHz segment of 450-500 MHz frequency range. **Sensitivity:** Lo and Hi VHF: 0.5 μV or less for 12 dB SINAD. UHF: 0.7 μV or less for 12 dB SINAD. **Adjacent Channel Rejection:** (30 kHz channel spacing) — 40 dB typ. (—55 dB typ. with optional 8-pole filter). **Scan Rate:** approx. 16 channels per second. **Scan Delay:** approx. ½ second. **Priority Channel Check:** approx. 4 seconds. **Antenna Impedance:** 50 ohms. **Audio Output:** AC operation, 1 watt; DC operation, 2 watts; less than 10% distortion. **Power Requirement:** 120 VAC, 60 Hz. 12 watts or 13.8 VDC, 300 mA squelched; 500 mA at full output. **Dimensions:** 3¾" H x 8½" D x 11¼" W. **Net Weight:** 5 lbs.



Outdoor Scanner Antenna

For VHF and UHF. Really helps improve reception. Covers all bands. VHF and UHF. For masts to 1½" diameter. SO-239 receptacle. **GRA-1132-1,** Shpg. wt. 2 lbs. **24.95**

GR-1131 Hi-Band VHF Scanning Monitor

If the emergency services in your area use the high-VHF band, this is the low-cost way to listen in! Covers 8 channels in any 8 MHz segment of the 146-174 MHz VHF band. Monitor fire calls, police, ambulances, Amateur 2-meter FM, marine emergency vehicles, government weather stations and more. Priority feature checks the priority channel every 4 seconds even when locked on another channel and overrides if there is activity on the priority channel. Features a built-in 4-pole crystal filter (for even better selectivity in crowded signal areas, order the optional 8-pole filter below); channel lockout buttons; extra-large lighted channel indicators. Built-in telescoping antenna with provision for an external antenna. Built-in speaker provides good audio quality. Has volume and squelch controls, manual channel selection. Built-in AC and 12 VDC power supplies. Walnut-grain metal case. Easy kit assembly, easy no-instrument alignment. Order crystal certificates below at right.

Kit GR-1131, Shpg. wt. 9 lbs. **99.95**

GR-1131 SPECIFICATIONS: **Scanning Range:** any 8 MHz segment of the 146-174 frequency range. **Sensitivity:** 0.5 μV or less for 12 dB SINAD. Other specifications same as GR-1132 at left. **Dimensions:** 3¾" H x 8½" D x 11¼" W. **Net Weight:** 5 lbs.

See page 54 for useful books to aid your listening.

Accessories for all Scanners on this page

Mobile Mounting Bracket. GRA-1131-1, Shpg. wt. 1 lb. **4.95**

Crystal Certificate. You send to crystal mfr. with specific frequency. Crystal is returned postpaid. Order one for each frequency.

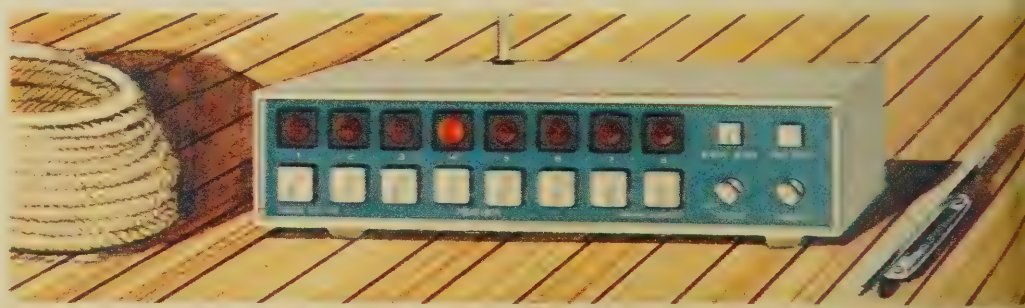
GRA-1100-1 ..... **each 4.95**

Optional 8-pole crystal filter. Improves selectivity for use in crowded signal areas. **GRA-1100-2,** Shpg. wt. 1 lb. **9.95**

Note: Some states prohibit use of scanners in vehicles. Check with local authorities.

MR-1134 Marine Monitor for boating information

- ***Priority channel selection***
- ***Large, lighted channel indicators***
- ***Automatic or manual channel selection***



An important accessory for every boat owner, fisherman, even people who live near harbors or lakes. Lets you automatically monitor up to 8 marine frequencies on the 156-163 MHz VHF marine band. Listen to weather frequencies, marine emergency channels, harbor instructions, fishing reports, ship-to-shore and ship-to-ship communications, more. Has priority channel feature — checks the priority channel every 4 seconds even when locked on another channel and overrides if there is activity on the priority channel. Channel lockout buttons let you monitor less than 8 channels when you wish. Manual scanning too, simply push the button for the single channel you wish to monitor. A 4-pole crystal filter provides good selectivity (for crowded signal areas, use the optional 8-pole filter above). A built-in telescoping antenna brings in plenty of signals, there's also provision for an external antenna. Has volume and squelch controls, automatic or manual scan selector, channel selector button. Handsome blue and white marine styling, and rugged case make the MR-1134 ideal for use on your boat. AC or 12 VDC operation. Easy kit assembly and simplified no-instrument alignment. Order crystal certificates above.

Kit MR-1134, Shpg. wt. 9 lbs. **109.95**

MR-1134 SPECIFICATIONS: **Scanning Range:** any 8 MHz segment of the 156-163 MHz frequency range. **Sensitivity:** 0.5 μV or less for 12 dB SINAD. **Adjacent Channel Rejection:** (30 kHz channel spacing) —40 dB typ. (—55 dB typ. with optional 8-pole filter). **Scan Rate:** approx. 16 channels per second. **Scan Delay:** approx. ½ second. **Priority Channel Check:** approx. 4 seconds. **Antenna Impedance:** 50 ohms. **Audio Output:** AC operation, 1 watt; DC operation, 2 watts; less than 10% distortion. **Power Requirement:** 120 VAC, 60 Hz, 12 watts or 13.8 VDC, 300 mA squelched; 500 mA at full output. **Dimensions:** 3¾" H x 8½" D x 11¼" W. **Net Weight:** 5 lbs.

Welcome Your Guests with the Tune of Your Choice.



$49.95 Unique Programmable Doorbell

A FUN to build and use kit that will brighten your home all year 'round! A one-octave C through C "keyboard" lets you program any tune up to 16 notes — celebrate the season, a birthday, an anniversary, a special party — whatever you like. Change notes by simply rearranging the leads, there are also controls for tuning, volume, speed and decay characteristics of the electronically synthesized sound. And installation is easy too — just wire between existing bell transformer and TD-1089. The TD-1089 is loud enough to be heard throughout most homes, but you can add extra speakers to the "extension" terminals and spread the sound throughout the house. Easy assembly too, ideal for first-time builders.

Kit TD-1089, Shpg. wt. 3 lbs. **49.95**

TD-1089 SPECIFICATIONS: **Power Requirement:** 16 Volts AC, 50/60 Hz, from standard doorbell transformer (not supplied) with 10 VA Rating. **Tone Characteristics:** Decaying, mellow. **Maximum Power Into Speaker:** 1 watt. **Speaker Size:** 3″ x 5″ oval — 16 Ohm. Extra speakers can be added for a total of not less than 16 Ohms. **Actuating Inputs:** Two, for front and rear doors. **Programming Matrix:** 13 notes x 16 beats — same note up to 9 beats. **Dimensions:** 5¾″ H x 8⅝″ W x 2⅝″ D. **Net Weight:** Approx. 1½ lbs. **Power Drain:** Idle, 6 watts, Maximum 12 watts.



Heathkit Telephone Amplifiers make your telephone more useful

Low As **$54.95**

- *Talk and listen to calls "hands-free"*
- *Great for conference and family calls*
- *Includes connectors for easy installation*

In performance, features and value, these two quality telephone amplifiers equal the finest you can rent or buy. To answer the phone, simply press the power button; to hang up press it again. Voice-activated circuitry instantly and silently switches the amplifier from talk to listen. A slide control adjusts the volume; a listen button lets everyone in the room hear both sides of a conversation, or lets you monitor the line while talking privately. The built-in microphone lets you talk from up to 10 feet away. To return the phone to normal operation, just turn the amplifier off. The GD-1112 requires an external phone to place calls, the GD-1162's built-in dial and ringer makes it a completely self-contained telephone. Both units operate on standard 9-volt battery (not supplied), or optional GRA-43-1 AC converter, order below. For easy installation, the GD-1112 includes a ¼″ phone plug and 4-pin telephone plug; the GD-1162 has a 4-pin phone plug and, for business phones, a 15-pin dataphone connector. Both come with 6′, 4-conductor cable. Each unit, 2½″ H x 8½″ W x 5¾″ D. Good-looking plastic case may be used on desk or wall-mounted.

Kit GD-1112, Amplifier, Shpg. wt. 4 lbs. **54.95**

Kit GD-1162, Amplifier with Dialer, Shpg. wt. 4 lbs. **74.95**

Kit GRA-43-1, AC Converter, Shpg. wt. 1 lb. **4.95**

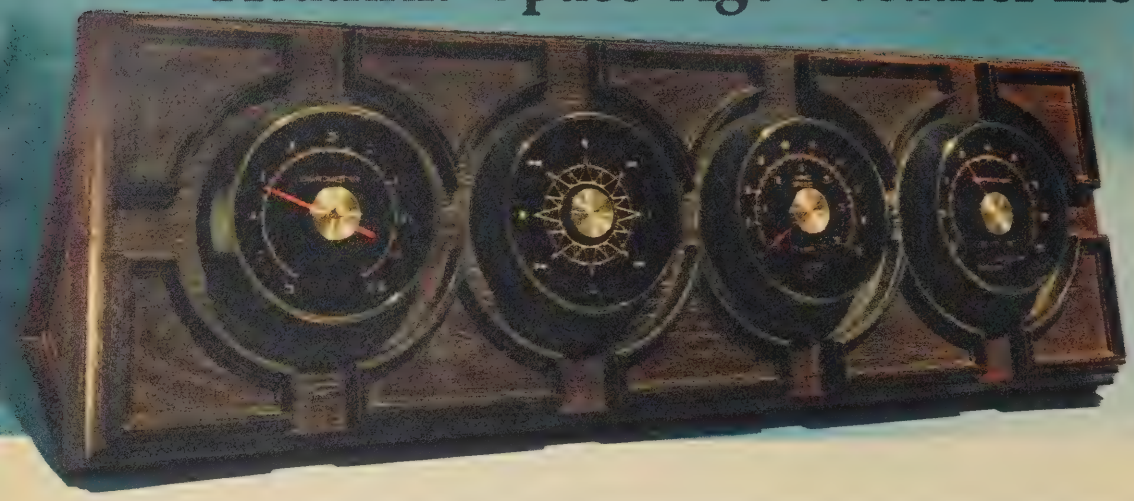
NOTE: Customer-owned equipment connected to telephone lines may be subject to local tariff.

handy index

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Heathkit "Space-Age" Weather Electronics





The remote transmitter assembly for the ID-1290 and ID-1590 clamps easily to any TV antenna mast.

$99.95

Stay "on top" of conditions with this five-function weather station

The Heathkit ID-1290 Weather Station monitors indoor and outdoor temperatures, barometric pressure, wind speed and direction — all with electronic accuracy and reliability. It's ideal for home or office, radio-TV stations, ham shacks, airport pilot lounges, anywhere accurate and instant weather information is needed.

The barometer lets you observe changes as small as 0.02 inches of mercury to indicate changing weather conditions, and it's accurate up to altitudes of 10,000 feet. The thermometer is calibrated in two degree increments from −40 to +120°F and a switch selects indoor or outdoor readings. Its ±2° accuracy is comparable to that found on far more expensive instruments. The windspeed indicator has two ranges — 0-30 mph or 0-90 mph, and 8 wind direction lights offer true 16-point resolution for precision readings.

The ID-1290's walnut-grained plastic cabinet can be hung vertically or horizontally; or used as a handsome and distinctive desk set with the stands included. The remote transmitter assembly (windcups, weather vane and outdoor temperature sensor) clamps onto any TV antenna mast and is connected to the plaque with optional 8-wire cable (below). Easy and enjoyable kit assembly makes the ID-1290 a great project for first-time builders too. Includes comprehensive weather book.

Kit ID-1290, Shpg. wt. 8 lbs. **99.95**

ID-1290 SPECIFICATIONS: **Wind Speed:** 0-30 mph, ±2 mph; 0-90 mph, ±5 mph. **Direction:** 8-point readout over 360°. **Temperature:** 0° to +120°F, ±2°F (typ. INDOOR); −40° to +120°F, ±2°F (typ. OUTDOOR). **Barometric Pressure:** 29-31 inches of mercury within .05 inches, accurate up to altitudes of 10,000 ft. **Operating Temperature:** Receiver, −32° to 100°F; Transmitter, −40° to +120°F. **Power requirement:** 110-130 VAC, 50/60 Hz, 3.5 watts. **Dimensions:** Wall mount, 20½" W x 7" H x 2" D; Desk 20½" W x 7" H x 6¾" D. **Net Weight:** 7 lbs.

8-Wire cable for remote transmitters

IDA-1290-1, 50 ft. cable, 2 lbs. **7.95**
IDA-1290-2, 100 ft. cable, 4 lbs. **13.95**
IDA-1290-3, 150 ft. cable, 5 lbs. **18.95**



Digital Wind Speed and Direction Indicator

Outstanding accuracy and easy-to-read digital display make this kit a "must" for pilots, boaters — anyone whose activities are affected by the wind. During construction, you pick the two readout modes you want from the three available: miles or kilometers per hour, or knots. Switches select mode and front-panel lights show which is in use. Incandescent bulbs mark the 8 principal compass points, providing 16-point resolution. Uses same transmitter assembly and cable as above. Rugged Cycolac® plastic case with teak-grain vinyl insert.

Kit ID-1590, Shpg. wt. 6 lbs. **79.95**

ID-1590 SPECIFICATIONS: **Wind Speed:** 0-99 in miles per hour, knots or kilometers per hour (choice of two). **Response Threshold:** 3 mph. **Accuracy:** ±1 digit or ±10%, whichever is greater. **Direction Response Threshold:** approx. 2 mph. **Operating Temperature:** Remote transmitter, −40 to +120°F; Receiver, 0 to 150°F. **Power Requirement:** 120 VAC, 50/60 Hz, 6.5 watts. **Dimensions:** Receiver, 2½" H x 7" W x 5" D; Remote transmitter, 30" boom.



Digital Indoor/Outdoor Thermometer

Fun-to-build kit monitors indoor/outdoor (or any two temperatures) with a big, bright, ½" high digital readout. The readout includes plus and minus signs as well as indoor and outdoor indicator lights. Switches select Fahrenheit or Celsius and let you choose continuous readings of one temperature or alternate readings of both. The 85' of cable included lets you place the temperature sensors just about anywhere for a variety of custom applications — home freezer, hot house, garage, basement, pump house, swimming pool, aquarium, almost any temperature. Black Cycolac® plastic case with teak-grain vinyl inserts. Looks great on desk, shelf or table.

Kit ID-1390, Shpg. wt. 4 lbs. **67.95**

ID-1390 SPECIFICATIONS: **Temperature Range:** Fahrenheit −40 to +120°; Celsius, −40 to +50°. **Accuracy:** Celsius, ±1°C from −15° to +50°C, ±2°C from −30° to −15°C. **Fahrenheit,** ±1°F from +20° to +120°F, ±2° from −30° to +20°F. **Display:** 2½-digit planar gas discharge with + and − sign. **Power Requirement:** 110-130 VAC, 60 Hz, 4 to 6 watts approx. **Dimensions:** 2½" H x 7" W x 5" D.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Here's Time and Temperature—By the Numbers!

1 Digital Electronic Clock/Thermometer

We've combined two of our most popular kits — our digital alarm clock and our indoor/outdoor temperature thermometer, AND included a practical temperature alarm. All in a single compact and stylish cabinet. The time and alternating indoor and outdoor temperatures (or any two temperatures you wish) are displayed in bright, orange digits. It's ideal for home or office.

Has a full-feature electronic alarm clock with a 10-minute "snooze" alarm for "catnaps" up to an hour and an instant-reset alarm bar (just touch it to reset alarm for the same time tomorrow!). Exclusive temperature alarm sounds whenever the temperature goes above or below any temperature you preset — great for monitoring greenhouses, orchards, refrigerated areas, etc.

Has easy-to-use time advance and alarm set switches, adjustable display brightness, PM time indicators; + and −, indoor and outdoor temperature lights. The factory-assembled temperature sensors come with 75′ (outdoor) and 10′ (indoor) cables so you can custom mount the sensors just about anywhere! Has a sleek, low-profile cabinet with simulated wood-grain top and trim. The ID-1490 is an easy-to-build kit, too — just 3 circuit boards, and a wiring harness simplifies assembly. You can build the ID-1490 in just a few evenings, use it for awhile and you'll wonder how you ever got along without it!

Kit ID-1490, Shpg. wt. 7 lbs. **134.95**



1

- ***Exclusive temperature alarm sounds if temperature goes above or below a preset temperature***
- ***Snooze alarm lets you take 10-minute "catnaps"***

ID-1490 SPECIFICATIONS: CLOCK. Format: 12 or 24 hour. Accuracy: Determined by accuracy of power line frequency. No accumulative error. THERMOMETER: 2½-digit with + and − signs, and indoor-outdoor indicators. Format: Switch-selected °C (Celsius) or °F (Fahrenheit) read out. Temperature Range: −40° to +70° C. −40° to +158° F. Accuracy: (Outdoor) ±1° from −40° to +70° C. ±2° from −40° to +158° F. (Indoor) ±1° C from 0° to 50° C. ±2° F from −30° to 120° F. Power Requirement: 105-135 VAC, 60 Hz. Dimensions: 11¼″ W x 6¾″ D x 2¾″ H.

2 "Budget" Digital Electronic Alarm Clock

Shows the hours, minutes and seconds in bright ½″ high digits that can be seen easily most anywhere in the room. It wakes you with a gentle electronic "beep" and lets you take catnaps of approximately seven minutes each for up to an hour. The special power interruption indicator shows all "eights" if there is a significant power interruption. The "eights" remain until the clock has been reset, assuring correct time all the time. The GC-1094 can be wired for 12 or 24-hour readout, and it has a 24-hour alarm, so even if you reset the alarm in the morning, you'll be awakened the next day. Handsome wood-grain cabinet measures only 2¼″ H x 7″ W x 4¾″ D. Kit assembly is really easy, too — making it a great project for first-time builders. Most parts mount on just two circuit boards, and a wiring harness simplifies assembly. For 120/240 VAC, 60/50 Hz.

Kit GC-1094, Shpg. wt. 4 lbs. **54.95**



2

3 Deluxe Digital Electronic Alarm Clock

Has the same fine circuit features as below, but includes a full-feature 24-hour alarm instead of the calendar. Wakes you to a gentle electronic "beep", and you can even take 7-minute "catnaps" for up to an hour by simply touching the snooze alarm. A convenient switch lets you select 12 or 24-hour (military) time format; an AM indicator lets you set the alarm for AM or PM. Easy to build, too. Same case style and dimensions as below. Less batteries.

Kit GC-1092A, Shpg. wt. 5 lbs. . . . . **Was 84.95, Now Only 74.95**

4 Deluxe Digital Electronic Calendar Clock

Keeps you right on schedule with an easy-to-read ½″ high digital display of the time in hours, minutes and seconds — and the date in four digits for month and day. Displays time continuously, or the date 2 seconds out of every ten, and you can call the date display any time by simply touching the case-top control. A standby battery supply takes over in case of power interruption and keeps the clock running without the display. When AC power is restored, the correct time is once again displayed, with no need to reset the clock. Also has automatic control of display brightness — brightly in brightly lit areas, dim in dimmer areas, with a switch for a continuous bright display. 12 or 24-hour clock format, too. Has a built-in charging circuit for rechargeable nickel-cadmium batteries, or you can wire it for standard batteries. Handsome low-profile case with rich brown tone finish, or you can place it in its pedestal base (included!) which swivels and tilts for easy viewing from any angle. The GC-1092D is an easy kit to assemble, and it's one of the easiest ways ever to stay on time and up to date! 8⅜″ W x 4⅞″ D x 2½″ H (4″ H with pedestal.) For 120 VAC, 60 Hz. Less batteries.

Kit GC-1092D, Shpg. wt. 5 lbs. . . . . **Was 84.95, Now Only 74.95**



Heathkit electronic digital "Super-Clock"

An electronic digital floor clock with full 3¼" high numerals in a modern, functional etagere cabinet



$149.95

- ***Automatic dimming circuit adjusts to room light for a charming and pleasant glow***
- ***Hour and minute read-out can be seen from anywhere in the room***
- ***Electronic Westminster Chimes build in easily for an authentic, rich "Big Ben" sound***

Add elegance with a "space-age" touch anywhere in your home! The GC-1195 "super-clock" is housed in a stylish cabinet with four smoked glass shelves for plants, books or knick-knacks — and the cabinet is finished in handsome simulated walnut-veneer laminate with anodized aluminum corner pieces.

The 3¼" high clock digits glow brightly enough to be read even in daylight, and an automatic dimming feature adjusts them to diminishing room light for a charming, subtle display in dim or darkened rooms.

The clock displays hours and minutes, with the center colon pulsing each second. A special power failure indicator circuit pulses the display brightness to show that power has been interrupted and clock must be reset. Easy time setting is accomplished by readily accessible, easy-to-use fast and slow time advance switches located on the bottom of the clock chassis.

The GC-1195 is a handsome addition to most any decor, and a great conversation piece. For even more charm and "Old World" distinction, add our electronic clock chimes accessory (described below).

Kit GC-1195, Shpg. wt. 57 lbs. Mailable **149.95**

GC-1195 SPECIFICATIONS

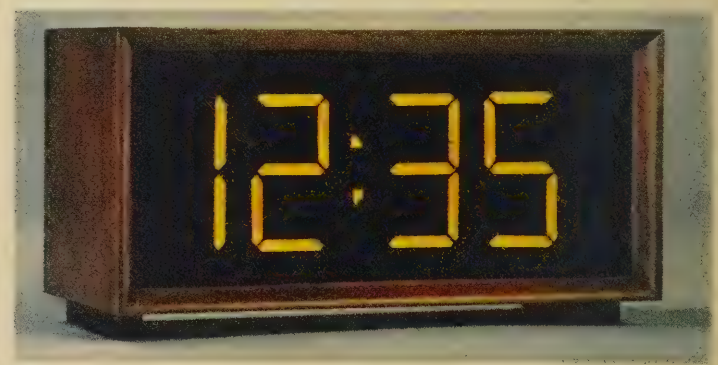
Display: 3¼" diffused incandescent readout. **Format:** 3½-digit (12-hour) time readout. **Power requirement:** 108-132 VAC, 50/60 Hz, 30 watts. 216-264 VAC, 50/60 Hz, 30 watts. **Dimensions:** 14" W x 9½" D x 60½" H. **Net Weight:** 48½ lbs.

Westminster Chimes Accessory

$79.95 ***Authentic "Big Ben" chimes sound***

Builds into the GC-1195 or GC-1197 to provide rich, electronically synthesized "Big Ben" chimes: 4 notes on the ¼-hour, 8 notes on the ½-hour; 12 notes on the ¾ hour and the full 16-note passage and hour annunciation on the hour. And you can even turn on a reassuring electronic "tick-tock". Has volume and pitch adjustment, sound-decay control, "tick-tock" volume control, built-in speaker.

Kit GCA-1195-1, Shpg. wt. 3 lbs. **79.95**



Digital Electronic Shelf "Super Clock"

$99.95 ***Has the same great features as our Digital Floor Clock in a handsome Shelf Clock Case***

Uses the same electronics and display as the GC-1195 floor clock, but is housed in a good-looking walnut-veneer cabinet suitable for shelf, table or desk-top use. Adds a touch of timely elegance to your home or office. Accepts optional GCA-1195-1 electronic chimes. Specifications same as GC-1195 above, except dimensions are 6½" H x 12½" W x 6¼" D.

Kit GC-1197, Shpg. wt. 10 lbs. **99.95**



Convenient and versatile AM/FM Digital Electronic Alarm Clock-Radio

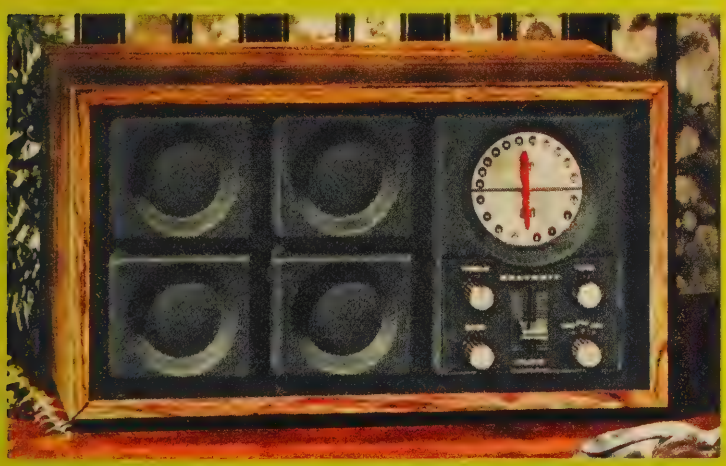
$139.95

- ***"Catnap" with the 7-minute snooze button***
- ***Stay "on time", even if AC power fails thanks to the built-in "fail safe" circuit***

Here's everything you need in a quality clock-radio — 24 hour set'n forget alarm, fine sound and style that fits anywhere — kitchen, bedroom, den, office. Setting the pace for convenience in the GR-1075 is the all-electronic digital clock. It reads out the time in conventional 12-hour format with bright orange 7-segment Beckman digits. Displays AM or PM, too. A lighted decimal pulsates to indicate seconds and also shows that the alarm is properly set. Readout features automatic brightness control. The 24-hour alarm cycle offers convenience you just won't find on conventional alarm clocks. Go to bed at 9 PM and set the alarm for 10 AM without being awakened in an hour. The alarm can be set to wake you with a gentle pulsating, electronic "beep" (which can be changed in volume by the radio volume control)...or by the soft music from the FM or AM radio station of your choice. The 7-minute snooze cycle feature is repeatable for up to an hour. Two 9-volt batteries (not supplied) take over during power interruptions and keep the clock counting, without the display — when power is restored the clock is "on time" and the alarm will go off at the set time. On the front panel are finger-flip switches for on/off; AM/FM selection; radio or electronic alarm; "wake-up" alarm set; "Snooze" cycle; plus volume and AM/FM tuning controls. Black plastic cabinet with brushed aluminum trim strip, and simulated walnut-grain vinyl end panels.

Kit GR-1075, Shpg. wt. 10 lbs. **139.95**

GR-1075 SPECIFICATIONS: **FM Sensitivity:** 5 μV @ 30 dB quieting. **AM Sensitivity:** 300 μV/M @ 20 dB quieting. **Speaker:** 3″ x 5″ oval. **Power requirement:** 120/240 VAC, 50/60 Hz; 17 watts max.; clock, 7 watts. **Dimensions:** 4¼″ H x 13⅝″ W x 8⅛″ D.



Deluxe Heathkit AM/FM Table Radio

An outstanding value, this compact and handsome table radio puts great sound anywhere you want it! Features quality solid-state circuitry, a sensitive AM/FM tuner and a full-range acoustic-suspension speaker. Its low-distortion amplifier (Power Output: 5 watts, minimum RMS, into 8 ohms with less than 1.0% total harmonic distortion from 60 Hz to 15 kHz) gives you a roomful of full-bodied sound. Separate bass and treble controls let you tailor the sound the way you like best. Handsome teak-grained vinyl-covered cabinet with molded front grille. Easy kit assembly, too, even for first-time builders.

Kit GR-1085, Shpg. wt. 12 lbs. **99.95**

GR-1085 SPECIFICATIONS: **FM:** Sensitivity: 5 μV. Selectivity: 60 dB. **GENERAL:** Power Requirement: 120/240 VAC, 50/60 Hz, 25 watts. Speaker: 4½″, 8 Ohm. Dimensions: 7″ H x 13″ W x 7¼″ D.



1 Heathkit AM/FM Portable Radio

Has AFC to prevent FM drift, AGC to prevent fading and blasting, big up-front speaker. Operates on six "D" cells (not included), or standard AC with the optional AC adapter below. Stitched leatherette carrying case with handle. 6¾″ H x 8¾″ W x 4″ D.

Kit GR-17, Shpg. wt. 6 lbs. **49.95**

GRA-43-1, AC Adapter, Shpg. wt. 1 lb. **4.95**

2 Solid-State AM/FM Table Radio

Fun-to-build kit brings in stations loud and clear. Has AFC, built-in AM and FM antennas, rich-sounding 3 x 5″ oval speaker. High-impact plastic case, 5¼″ H x 10″ W x 4⅞″ D. For 120 VAC.

Kit GR-48, Shpg. wt. 5 lbs. **47.95**

3 AM Pocket Portable Radio

A perfect kit for beginners, and a fun-to-use radio with big 3½″ speaker. Handsome white and black plastic case, 4″ H x 7⅞″ W x 2″ D. Operates on 9-volt battery (not supplied).

Kit GR-1008, Shpg. wt. 2 lbs. **16.95**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Build yourself a lifetime of music enjoyment



$569.95 $1245.00

"Keyboard Kombo" lets you create the sound of an entire musical group with one-finger chords

Play professional sounding music with solos, rhythms and accompaniments all at the touch of a finger. The TO-1102 accurately reproduces the sounds of 12 solo instruments (see specifications). As you play the solos, the TO-1102 automatically accompanies you with piano, guitar, banjo, harpsichord or flute rhythms and alternating bass notes. Variable slide controls for drum tempo and volume let you preset rhythms of Waltz, Fox Trot, Swing, Rock and Latin. Has 24 major and minor chords. A special memory-chord circuit keeps the last chord sounding until you play the next, providing a smooth flow of music. Vibrato and reverb controls let you create special effects for even more musical versatility. Has on-off switch with pilot light, volume control, slide controls for keyboard balance and a balanced expression control. The TO-1102's sound system delivers the music you produce with outstanding sound quality. There's a deluxe all-solid-state amplifier with a heavy-duty wide-range 12″ speaker system. There's even a headphone jack so you can entertain yourself or practice in complete privacy. The keyboard is clearly marked with each note, so learning to play is easy and fast. Just sit down with it for awhile and you'll find yourself sounding like a "Pro"! We include full instructions and a songbook to get you started! Contemporary designed cabinet is fully assembled with simulated rosewood laminate for a rich, expensive look. Includes bench.

Kit TO-1102, Shpg. wt. 189 lbs. Motor Freight **569.95**

TO-1102 SPECIFICATIONS: **Solo Instruments:** Flute, Clarinet, Trumpet, Violin, Accordion, Guitar, Piano, Banjo, Mandolin, Harpsichord, Vibes, Hawaiian Guitar. **Accompaniment Instruments (Rhythm):** Piano, Guitar, Banjo, Harpsichord and Flute: Tempos — Waltz, Fox Trot, Swing, Rock, Latin. **Drum Controls:** Tempo — Variable Slide; Volume — Variable Slide. **Chords:** 24 one-finger Chords, Memory Chord. **Controls:** Vibrato Cancel; Reverberation, variable slide; Keyboard Balance, variable slide. On-off switch with pilot indicator. Expression control. Headphone jack. **Cabinet:** Contemporary Design with Rosewood Finish. **Sound System:** solid-state amplifier with 12″ heavy-duty Speaker. **Dimensions:** 34¼″ H x 36″ W x 21¼″ D. **Net Weight:** 150 lbs.

SPECIAL ORGAN AND KOMBO WARRANTY: The tone generators of the Heathkit/Thomas organs and Keyboard Kombo on this page are warranted for a period of five (5) years from the date of purchase.

This deluxe Heathkit/Thomas Spinet Organ puts an orchestra in your home

The TO-1260 is our most versatile organ, yet exclusive Color-Glo keys will have you playing complete songs in just minutes. A breathtaking range of voices helps you create exciting orchestral effects. And the optional TOA-60-1 (below) lets you add your own "Rhythm Section" for even more fun. In addition to two 44-note overhanging manuals with tilted keys, the TO-1260 features a 13-note radial arc pedal board, two 25-watt RMS amplifiers and two 12″ speakers. A convenient accessory panel lets you plug in headphones for silent practice, use an external cassette deck to play or record, or plug in an external tone cabinet. The handsome cabinet comes completely assembled in Contemporary style. The cabinet is handcrafted using furniture-grade hardwoods with decorative trim, and finished in hand-rubbed walnut.

Kit TO-1260W, Shpg. wt. 247 lbs., Motor Frt. **1245.00**

TO-1260 SPECIFICATIONS: **VOICES: UPPER KEYBOARD (Solo):** Flute 16′ Flute 8′, Flute 4′, Trombone 16′, Bassoon 16′, Trumpet 8′, Diapason 8′, Clarinet 8′, Oboe 8′, Violin 8′, Mando (Pre-Set), Harpsichord (Pre-Set), Piano (Pre-Set), Accordion (Pre-Set). **LOWER KEYBOARD — (Accomp.):** Tuba 8′, Diapason 8′, French Horn 8′, Melodia 8′, Cello 8′. **PEDAL KEYBOARD** — Bourdon 16′, Major Flute 8′, String Bass 8′. **CONTROLS:** Solo — Bright, Accomp. — Bright, Solo Sustain — Long, Auto — Sostenuto, Solo O — Tremulant, Solo Flute — Tremulant Accomp. □ — Tremulant, Pedal Sustain — On/Off, WAH WAH — On/Off, Variable Slide — Pedal Volume, Variable Slide — Reverb Balance, Variable Slide — Percussion Volume, Variable Slide — Manual Balance, Expression Pedal. **Dimensions:** 37½″ H x 44″ W x 23½″ D.

LAST CALL! Limited Quantities

Add "Rhythm Section" versatility to your organ

Touching a button adds automatic bass patterns, alternating bass pedal notes, complete drum section, piano, guitar, banjo or harpsichord accompaniment and your choice of 8 rhythm patterns. For TO-1260 and TO-1160 organs only.

Kit TOA-60-1, (not shown). Shpg. wt. 5 lbs. **299.95**

TOA-60-1 SPECIFICATIONS: **PRE-PROGRAMMED RHYTHM PATTERNS:** Waltz, Fox Trot, Rock, Soul, Polka, Samba, Bossa Nova, Rhumba. **Controls:** Drums (On/Off), Tempo, Volume. **RHYTHM VOICES:** Add Cymbal, Snare/Tom Tom.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Heathkit Music Accessories help you perform BETTER!



Our most popular guitar Amp/Speaker Kit only $159.95

[1] **25-watt Guitar Amplifier.** An excellent choice for the musician on the move! The rugged one-piece case with carrying handle houses a full control amplifier and a speaker system featuring two heavy-duty 12″ woofers — takes plenty of power for day-in, day-out performance without breakup. Has two dual-input channels — one for accompaniment, microphone, etc.; the other for special effects. Features double-spring variable reverb and tremolo with variable rate and depth, a line reverse switch to minimize hum. Two footswitches permit hands-free control of reverb and tremolo. Compact and functional ¾″ black vinyl-covered wood cabinet measures 28″ W x 19¾″ H x 9″ D. For 120/240 VAC, 60/50 Hz.

Kit TA-16, Shpg. wt. 48 lbs. **159.95**



Our Deluxe Guitar Amplifier only $214.95

Our Deluxe Instrument Speaker only $199.95

[2] **Deluxe Guitar Amplifier.** Fine-sounding instrument amplifier gives you professional performance features and a full 120 watts of EIA music power at a low build-it-yourself kit price. Has a switchable built-in harmonic modifier for that "fuzzy" sound; a special brightness switch to enhance high frequency presence. Separate bass and treble boost controls to adjust the sound the way you want to play it, a dual-spring-type variable reverb and a tremolo that's variable in both rate and depth to allow a wide variety of musical effects. A dual footswitch gives you hands-free on-off control of tremolo & reverb. Has three separate channels with two inputs for each channel — ideal for small groups. Can be used with guitar, bass guitar, electronic combo organ, microphone/phonograph. Rugged ¾″ black vinyl-covered wood cabinet, 27 5/16″ W x 6¾″ H x 14½″ D. For 120/240 VAC, 60/50 Hz.

Kit TA-17, amplifier only, Shpg. wt. 40 lbs. **214.95**

[3] **Deluxe Instrument Speaker.** Matched to TA-17 above, delivers excellent sound from two 12″ woofers with 27-oz. magnets and fiberglass voice coils; and a special horn driver for extra brilliance. Stacks with TA-17 for easy, convenient setup. Black ¾″ vinyl-covered wood cabinet, 25⅞″ W x 38″ H x 14½″ D. With 20-ft. cable.

Kit TA-17-1, Shpg. wt. 112 lbs. Motor Freight **199.95**

Our Electronic Metronome makes practice "perfect" only $19.95

[4] **Electronic Metronome.** A necessary accessory for student and teacher alike — combines easy operation with accuracy and dependability. A front panel control turns the unit on and adjusts tempo from 40 to 210 beats per minute. A rear panel control adjusts the volume. A handy chart on cabinet bottom relates tempos in various time signatures to beats per minute. Cherry-finish birch cabinet. Easy 1 evening assembly. Requires two 9-V batteries (not supplied).

Kit TD-17, Shpg. wt. 2 lbs. **19.95**

See page 43 for Informative Music Books.

Professional-quality PA Equipment



LOWEST PRICES EVER!
SAVE on both the individual pieces and the complete system!



[5] **P.A. Control Amplifier.** Delivers 100 watts continuous power to two column speakers, has six fully mixable low-impedance inputs; each with bass, treble reverb-on-off and attenuation controls; complete filtering system for good sound. Add as many booster amps and speakers as you need for any audience coverage — even add more control amps for additional inputs. Rugged particle board case, 21½″ W x 11¼″ H x 7″ D. For 120/240 VAC, 60/50 Hz.

Kit TA-1620, Shpg. wt. 53 lbs. .....**Was 469.95 Now Only 429.95**

[6] **Low-Distortion Booster Amplifier.** Use with the TA-1260 for even more power. Delivers 100 watts continuous to two column speakers. Matched in style and stackable with the TA-1620.

Kit TA-1625, Shpg. wt. 22 lbs. .....**Was 199.95 Now Only 179.95**

[7] **PA Speaker Column.** Has six 8″ full-range speakers response tailored for clean voice reproduction; an output jack for TA-1625 booster amp, or to connect two columns in parallel. With 50′ cable, storage compartment. 14″ W x 62″ H x 10¼″ D. Shpg. wt. 112 lbs.

Kit TS-1630, Motor Freight ....**Was 209.95 each Now Only 179.95**

SAVE on this complete PA system!

SAVE $339.90 Original Prices if purchased separately, $889.85 **NOW $549.95**

Control Amplifier and Two Column Speakers.

TAS-1620, Shpg. wt. 277 lbs. Motor Freight **549.95**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Kits for fun, convenience and safety

Heathkit Metal Locators — A great find!

Start your own treasure hunt with these Heathkit Metal Locators — find coins, antiques or any buried metal object.



1 Heathkit GD-348 — Our best Metal Locator

Heathkit metal locators use a sophisticated "induction balance" system — you don't hear anything until a piece of metal enters the field. Then the tone grows louder as you get closer to the object. Listen through the built-in speaker or optional headphones, or use the front-panel meter to pinpoint your find. The GD-348 has null and wide range sensitivity controls that let you adjust it to find smaller or larger objects, overcome ground effects, etc. The shaft telescopes and the search coil folds flat for easy storage.

Kit GD-348, Locator only, Shpg. wt. 5 lbs. **99.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 1 lb. **5.95**
GDA-348-1, carrying case, Shpg. wt. 2 lbs. **14.95**

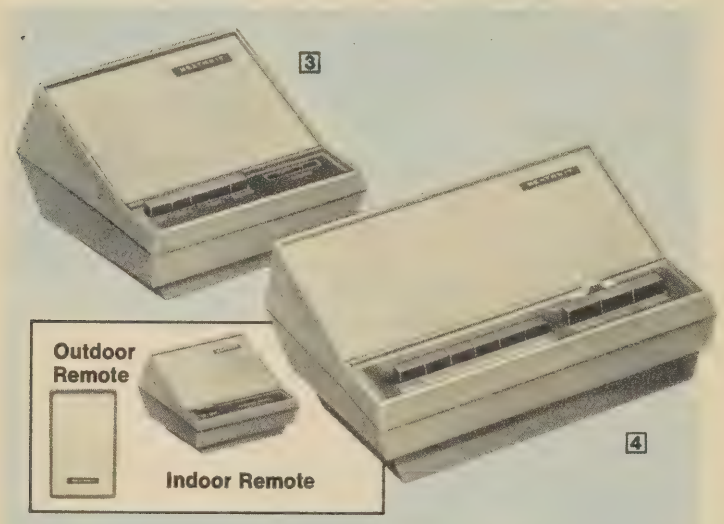
2 Heathkit GD-48 Standard Metal Locator

Uses an "induction balance" system similar to the GD-348. There are no tone variations to guess at because there is no tone until a metal object enters the field. All solid-state circuitry, telescoping shaft, built-in speaker, headphone jack, meter. A single 9-volt battery (not included) supplies power.

Kit GD-48, Locator only, Shpg. wt. 6 lbs. **69.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 1 lb. **5.95**

Heathkit Intercoms for step saving convenience

These quality intercoms provide two-way communications anywhere you need it — room-to-room, house-to-garage, upstairs-to-downstairs. Build the ones you need for your own "custom" system!



3 Heathkit 2-Station Intercom System

Master station accommodates up to two remotes. Remotes can initiate "private" calls to Master. Master can call either or both remote stations. Low-profile cabinets with plastic feet for surface use, holes for wall mounting. 3¾" H x 6" W x 5¾" D.

Kit GD-140, one Master, one Remote, Shpg. wt. 4 lbs. **39.95**
Kit GD-120, one extra Remote, Shpg. wt. 2 lbs. **15.95**
GDA-110-2, 100' 4-conductor cable, Shpg. wt. 3 lbs. **9.95**

4 Indoor/Outdoor Intercom System

Master functions include "All Call," "Talk," "Dictate"... plus monitoring of up to four Remotes. Indoor Remotes can be rendered private to prevent monitoring. GD-110 and GD-120 are light green and measure respectively 4½" H x 8½" W x 6¾" D and 3¾" H x 6" W x 5¾" D. GD-130 has weatherproof crinkle finish. 5⅜" H x 3⅝" W x 2⅝" D.

Kit GD-110, Master Station, Shpg. wt. 5 lbs. **49.95**
Kit GD-120, Indoor Remote, Shpg. wt. 2 lbs. **15.95**
Kit GD-130, Outdoor Remote, Shpg. wt. 2 lbs. **12.95**
GDA-110-2, 100' 4-conductor cable, Shpg. wt. 3 lbs. **9.95**
GDA-110-4, 100' 2-conductor outdoor cable, Shpg. wt. 1 lb. **5.95**

First Alert™ Battery-Powered Early Warning Smoke Detector



$39.95

- ***Ionization-type detector gives an earlier warning than conventional heat detectors***
- ***Protects your home, family and property from the ravages of deadly fire***

Protect yourself from tragedy! This performance-proven detector is already in millions of homes and it *SHOULD* be in yours. Detects fire in its first stage, when there's still time to protect your family from flames and suffocating smoke. Warns you before smoke or flames, by sounding its self-contained built-in alarm horn. This 85 decibel horn is powerful enough to awaken people sleeping soundly behind closed doors. Has dual-chamber detection for maximum reliability. Operates on its own internal battery (included!) that will last at least a year. If the battery needs replacement, a low-battery trouble signal activates and will sound an intermittent beep for as long as a month. Battery operation makes installation easy too — just fasten to any ceiling or wall with the mounting screws and anchors that are included. Has automatic reset, built-in test switch to check operation before installation. 100% solid-state circuit. Temperature range: 0° to 112° F. Humidity Range: 20%-95% RH. The first alert provides excellent area coverage. In most cases, two units will provide effective coverage for an average size home. You NEED First Alert for every area in your house. It's a low-cost investment in safety that could be a lifesaver. First Alert may qualify you for an insurance discount — check with your agent. U.L. listed.

GD-1414, Shpg. wt. 2 lbs. Assembled . . **39.95**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Find fish faster and easier!

Straight Line/White Line Depth Recorder —

THE SEEKER™

A supremely sensitive and dependable fish-finding aid that shows you exactly where they are! An important navigation aid for following coast line depths when operating in any weather.

HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE

ONLY $299.95



Actual MI-2910 recording made at Lake Mead, Nevada

Compare features and specifications with units costing much more!

The Heathkit MI-2910 is one of the most useful boating and fishing accessories you can own. It helps you find the fish, and it provides a permanent record of the best spots and depths so you can find your favorite spots again and again easily. Its bottom recording accuracy also makes it a valuable navigation aid for following coastline depths and mapping lakes. Best of all, it's priced lower than the cost of comparable recording depth sounders.

An on-off sensitivity control adjusts the MI-2910 to indicate the bottom and fish or other objects above it. The MI-2910 will clearly indicate schools of bait and small fish as well as individual large fish. Holes and dropoffs are clearly shown for lake mapping purposes too.

The extra-wide-beam transducer covers a larger area of water than most conventional units, so you get a better and wider "picture" of what's below you. Its three ranges (5′ to 200′, 200-400′, and 400-600′) makes it useful for virtually any lake or coastal area.

Uses a straight line recording system for easier and more accurate chart reading and interpretation. A white line control lets you adjust the bottom indication to a fine line so objects or fish close to the bottom can be distinguished easily. A switch controlled marker puts a vertical line on the chart for easy reference marking. A roll of paper lasts approx. 13 hours for continuous charting. And the two-piece case opens easily for convenient paper replacement.

The MI-2910 has two lamps to light the chart for easy operation at night. The weather-resistant case with gasket seals helps prevent water from getting in the recorder. A universal gimbal mount lets you install the MI-2910 just about anywhere, and remove it for theft protection and storage when not in use. With one roll chart paper.

Kit MI-2910-1, recorder with through-the-hull transducer and 30′ cable. Shpg. wt. 16 lbs. **299.95**

Kit MI-2910-2, recorder with transom mount transducer and 30′ cable. Shpg. wt. 17 lbs. **299.95**

MIA-2910-1, Two Rolls Chart paper. Shpg. wt. 2 lbs. **9.95**

Special transducer has extra-wide beam to show larger underwater area. Supplied with 30′ cable for easy installation and placement on most any boat. Available with through-the-hull or transom mount.



Easy to Install and Use! The MI-2910 is compact for easy mounting on the instrument panel and near the wheel of most any boat. The convenient control panel and easy-to-read lighted chart makes finding the fish a lot easier. Shows other submerged objects too, important for safe navigation.



MI-2910 SPECIFICATIONS: **Power Requirement:** 11-16 VDC at 1.6 amperes maximum. **Depth Range:** 5′ to approx. 600′. **Display:** straight (vertical) line plotting on high contrast paper. **Accuracy:** better than 97% of indicated depth with belt motor speed at 320 rpm. **Controls:** Sensitivity control with power on-off switch. White line control with on-off switch. 5-200′, 200-400′ and 400′ to 600′ range switches. Marker pushbutton. **Transducer:** frequency, 50 kHz, ±4 kHz. **Beam Width:** 35° at 3 dB. **Cable length:** 30 ft. **Mounting:** through-hull or transom. **Chart Paper:** Size, 3 15/16″ x 50′ with pre-marked depth scales. **Take-up speed,** approx. ¾″ per minute. **Running time per roll:** approx. 13 hours. **Dimensions:** less gimbal bracket, 11″ W x 8″ H x 7″ D. **Net Weight:** less transducer 6½″ lbs.



Marine Scanner

Read all about the Heathkit Marine VHF Scanner on page 2. Listen to weather reports, ship-to-shore communications, coast guard warnings. A real aid to boating safety!

Build yourself Better Fishing!





[1] **Dual-Range Fish Spotter®**
Was ~~$109.95~~
Now **$99.95**

Save **$10** over '76 Prices

[2] **Economy Fish Spotter®**
Was ~~$79.95~~
Now **$64.95**

[3] **Transducer Bracket**
$19.95

[4] **Thermo-Spotter® Thermometer**
$29.95

[1] Heathkit Dual-Range Fish Spotter® Sounder

The Heathkit MI-2901 Fish Spotter® Sounder has adjustable audible alarm you set to sound off at any depth to 240 ft. Fish swimming between surface and preset depth will trigger alarm. *Includes two switch-selected ranges* (0-60′ and 0-240′) for sharper definition; bright neon-flasher for precise depth reading; noise rejection circuitry to eliminate engine ignition interference. Rugged aluminum cabinet. The transducer features a barium titinate ceramic element encased in a durable waterproof housing. Portable suction-cup transducer bracket. Powered by two 6-volt lantern batteries (not included).

Kit MI-2901, Shpg. wt. 9 lbs. ..... **Was 109.95 Now Only 99.95**

Kit MIA-2900-1, Scanning Transducer Bracket, Shpg. wt. 4 lbs. **19.95**

MI-2901 SPECIFICATIONS

Accuracy: ±2% with motor speed of 2400 rpm in the 0-60′ range and with motor speed of 600 rpm in the 0-240′ range. **Sounding Rate:** 40 times per second on the 0-60′ range, 10 times per second on the 0-240′ range. **Frequency:** 200 kHz, ±5%. **Noise Rejection:** Fixed at approximately 500 microseconds integration time. **Receiver Sensitivity:** 75 μV nominal at 200 kHz. **Depth Indication:** Neon lamp flashes at zero and again at the indicated depth from the object. **Alarm:** 5-59′ on the 0-60′ range. 5-239′ on the 0-240′ range. **Transducer Cable Length:** 15′. **Power Requirement:** 12 VDC. **Dimensions: (Less Handle):** 7″ H x 6″ W x 11″ D.

[2] Heathkit Economy Fish Spotter® Sounder

An excellent choice for the fisherman on a budget. Similar to MI-2901 above, but with single range to 120-ft. Reads 240′ max. Has bright neon indicator. No audible alarm.

Kit MI-2900, Shpg. wt. 8 lbs. ..... **Was 79.95 Now Only 64.95**

[3] Heathkit Scanning Transducer Bracket

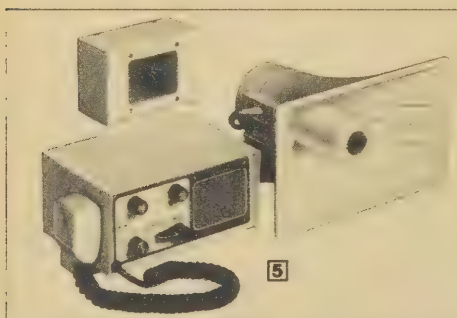
Designed for use with Heathkit MI-2901 and MI-2900 Fish Spotter® sounders. "C" clamp mounting. Scans 360°, locks in any position. Accepts any 1⅜″ cylindrical transducer.

Kit MIA-2900-1, Shpg. wt. 4 lbs. **19.95**

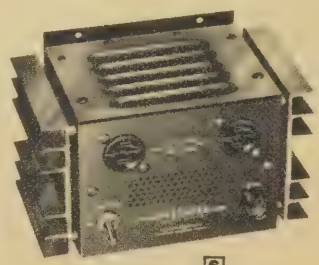
[4] The Thermo Spotter® thermometer finds the depth where your fish feed

Completely self-contained with submersible sensing element on a 100-ft. cable. Battery-powered meter circuitry in high-impact plastic take-up reel case. Simply lower the line, press spring-loaded meter button for temperature readout, check depth on cable. Kit includes operations manual with fish temperature preference charts. Uses 1.5-volt penlight battery (not included).

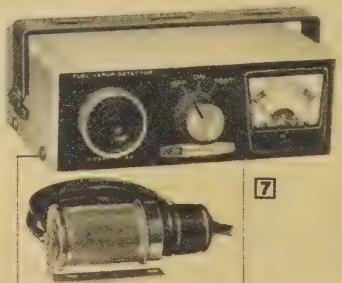
Kit MI-104, Shpg. wt. 3 lbs. **29.95**



[5]



[6]



[7]



[8] [9]

[5] **Automatic Foghorn/Hailer.** Features a husky 55-watt amplifier; foghorn rate and duration controls; separate "listen" & "hail" gain controls. optional remote speaker for ship's intercom use. Easy to assemble, and includes low-profile weather-resistant deck horn, 20 ft. speaker cable, gimbal mount. Styled in marine white and blue. Operates on 12 VDC power system, positive or negative ground. 4¾″ H x 9¾″ W x 9¼″ D.

Kit MD-19A, Shpg. wt. 15 lbs. **99.95**

Kit MDA-19-1, Optional remote speaker for intercom use. Shpg. wt. 2 lbs. **11.95**

[6] **Economy Power Inverter.** Operates small appliances from 6 or 12-volt input. Up to 175 watts continuous. Not for high starting current or sine wave AC equipment. 25-amp fuse.

Kit MP-10, Shpg. wt. 8 lbs. **44.95**

[7] **Fuel Vapor Detector.** Gives a meter indication of safe — dangerous — explosive bilge conditions. Sounds an alarm when fumes are present. Solid-state circuit. Fail-safe provision triggers alarm should any component fail. Built-in relay controls blower or other warning devices.

Kit MI-25, Shpg. wt. 3 lbs. **79.95**

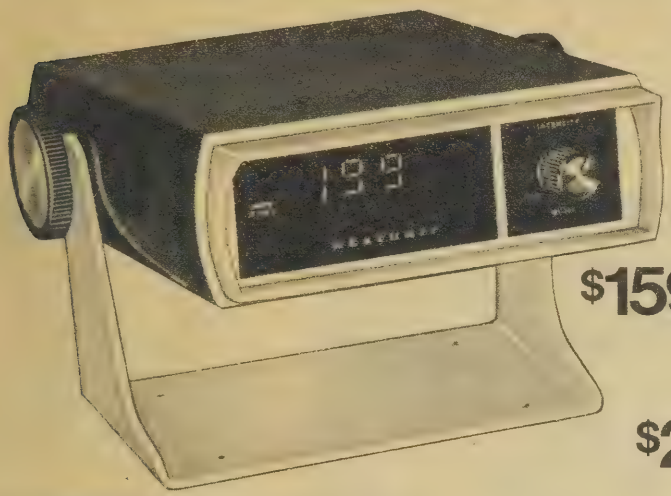
MI-25 SPECIFICATIONS: **Voltage:** 12 VDC, ±10%. **Current:** 1.0 A nominal. **Panel size:** 2⅛″ H x 5⅛″ W. **Depth:** 5″. **Detector head size:** 1½″ round x 2½″ long. **Interconnecting cable:** 15′. May be shortened 1½′. **Color:** Marine white & black. **Material:** Aluminum. **Temp. range:** –30°C.

[8] **Marine Electronics Handbook**—covers radios, codes, antennas, direction finders; clearly written. **EDP-134** **4.95**

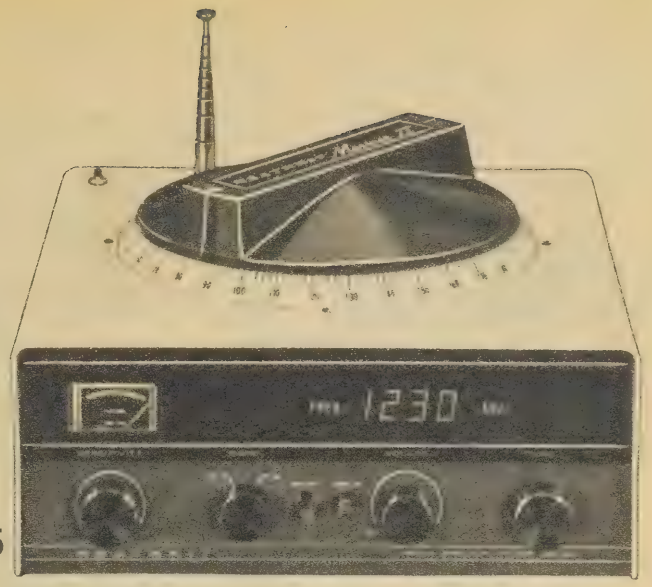
[9] **Easi-Guide to Boat Radio** — how to select, install & maintain a boat radio; FCC rules governing marine radio; a real asset to boating safety. **EDP-133** **3.50**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

It's Heath for better boating!



$159.95



$219.95

Heathkit Digital Depth Sounder

Lets you know depth of water below you from 2.5 to 199 ft.

Accurate depth readings at a glance. Dual-range digital display automatically reads depth in 0.1 foot increments from 2.5 to 19.9 feet and in 1 foot increments from 20 to 199 feet. A red light signals clearance of 10 feet or less. Single knob controls power on/off and brightness control. Rugged Cycolac® case; gimbal mounting bracket; 15 feet cable for through-hull installation, 25 feet for transom mount.

Kit MI-101-1, With through-hull transducer, Shpg. wt. 7 lbs. . . . **159.95**

Kit MI-101-2, With transom transducer, Shpg. wt. 6 lbs. **159.95**

MI-101 SPECIFICATIONS: Accuracy: ±2%, ±1 digit. Current drain: 300-500 mA. Power requirement: 10-17 VDC @ 500 mA. Dimensions: 2¼" H x 6⅝" W x 8½" D (less gimbal hardware).

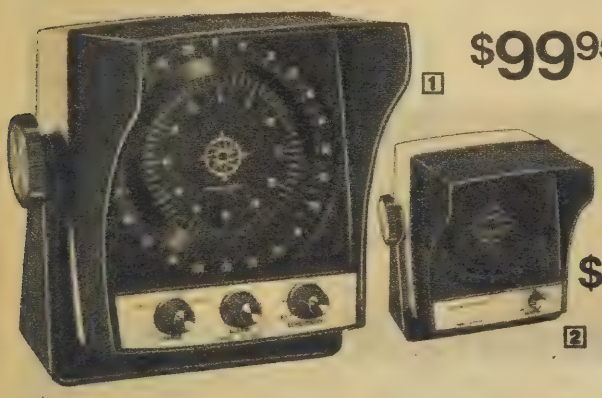
Heathkit Digital Radio/Direction Finder

Digital readout pinpoints AM or beacon stations

Keeps you informed on the 190-410 kHz LW band and standard AM. It identifies stations with a digital frequency readout, and gives you a heading from its big easy-read azimuth ring marked in 2° increments! Has excellent sensitivity, lighted meter for accurate null indications, telescoping sense antenna for an impressive bearing accuracy of ±3°. Has front panel RF sensitivity control. Operates from 12 VDC system, or 6 "D" cells (not included). Battery-saver circuit cuts display off after 20 seconds, can be recalled instantly.

Kit MR-1010, Shpg. wt. 13 lbs. **219.95**

MR-1010 SPECIFICATIONS: Sensitivity: Typically 30 μV/m (LW) for 10 dB S+N/N. Selectivity: (6 dB points): 3 kHz (LW); 5 kHz (AM). Audio Output: 1 watt. Speaker: built-in 3x5". Current Drain: 450 mA (with display & meter); 110 mA (meter only); 30 mA (radio at typical listening level). Dimensions: 7¼" H x 11½" W x 12" D.



$99.95

[1]

$64.95

[2]

[1] Heathkit Dual-Range Depth Sounder

Shows depth, type of bottom, schools and individual fish, submerged objects. A high-pitched "beep" alerts you to shoals or objects projecting above any preselected depth from 5 to 240 ft. Has switch-selected 0-60 and 0-240 ft. ranges; electronically controlled motor; fixed noise rejection; polarity protection; super-bright neon indicator. Cycolac case with glare-free bezel and sun shield. Gimbal mount, quick-disconnect power and transducer leads. Shpg. wt. 8 lbs.

Kit MI-1031-1, with thru-hull transducer, 15' coax **99.95**

Kit MI-1031-2, with transom transducer, 25' coax **99.95**

[2] Heathkit Single-Range Depth Sounder

As above, single 0-240 ft. range, no alarm. Shpg. wt. 8 lbs.

Kit MI-1030-1, with thru-hull transducer and 15' coax **64.95**

Kit MI-1030-2, sounder with transom transducer and 25' coax . . **64.95**

MI-1030 and MI-1031 SPECIFICATIONS: Frequency: approx. 200 kHz. Accuracy: Within 2% of actual depth. Transducer: Barium titanate ceramic element encased in waterproof housing. Power requirement: 0-60' range, 225 mA @ 11-15 VDC (MI-1031 only), 0-240' range, 125 mA 11-15 VDC with one return pulse. Dimensions: 6½" H x 5¾" W x 7¼" D.



$399.95

Mfr's suggested retail price, $524.95

Midland 45-Channel VHF Marine Radiotelephone

Has full legal 25-watt transmitter output

Model 13-535. Here's a full feature radiotelephone that's right for any boat! Covers marine channels 6-28 and 65-88 for transceiver operation, receives marine channel 15 and both NOAA weather channels. Has 25 W/1 W power switch, squelch control, phase-locked-loop tuning, lots more! Includes coiled-cord mike, mounting bracket, DC power cord.

MWW-4501, Assembled. Shpg. wt. 9 lbs. **399.95**

A-S 8', 6 dB antenna with chrome ratchet base.

MWS-4511, Shpg. wt. 14 lbs. UPS **79.95**

13-535 SPECIFICATIONS: Control: PLL synthesized with detent tuning. Connections: Microphone, external speaker, antenna, DC power. Power Source: 13.6 VDC (nominal) negative ground. Size: 3¼" H x 8" W x 10½" D.

Your choice of transducers for MI-101, MI-1030, MI-1031



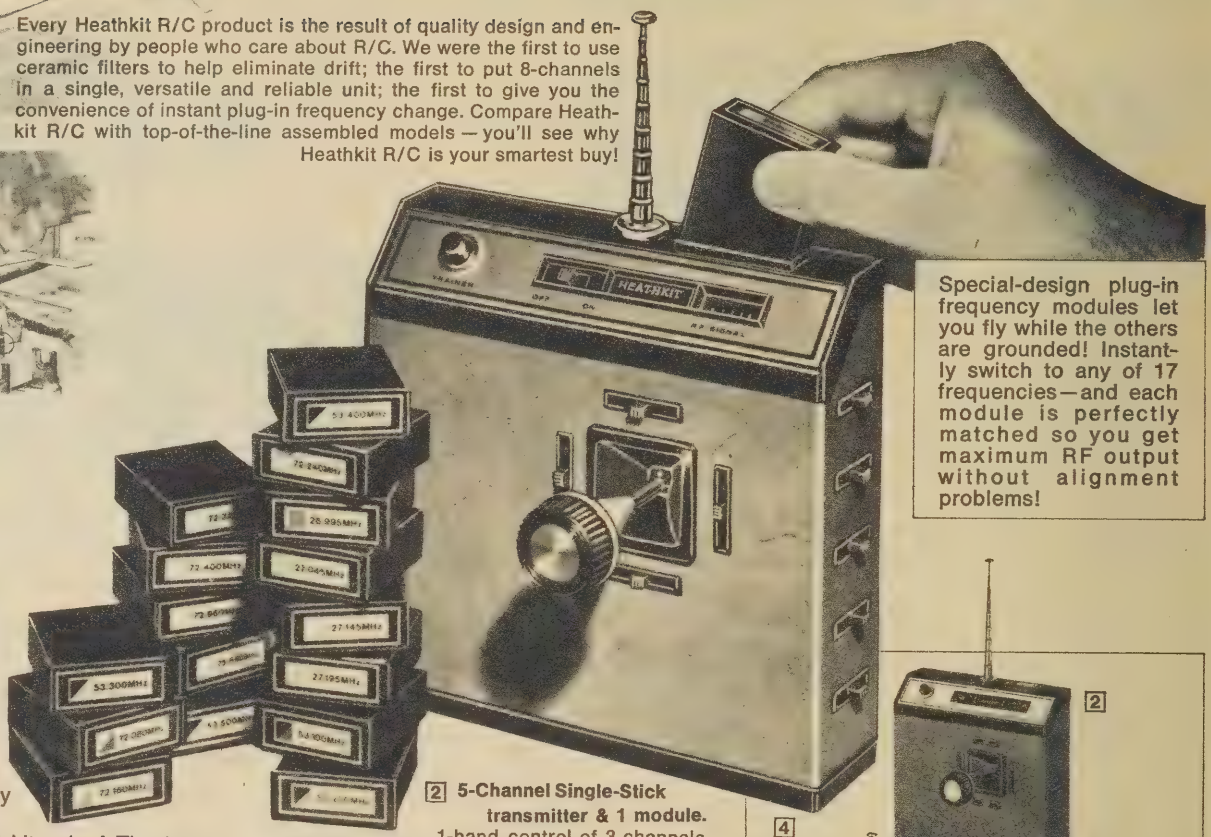
These depth sounders are available with either through-the-hull or transom-mount transducers. The transom mount unit (B) is recommended for high-speed craft with planing hulls. The through-the-hull transducer (A) is ideal for a permanent mount on large boats with displacement hulls.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Heathkit Pack-17™ R/C–



Every Heathkit R/C product is the result of quality design and engineering by people who care about R/C. We were the first to use ceramic filters to help eliminate drift; the first to put 8-channels in a single, versatile and reliable unit; the first to give you the convenience of instant plug-in frequency change. Compare Heathkit R/C with top-of-the-line assembled models — you'll see why Heathkit R/C is your smartest buy!



Special-design plug-in frequency modules let you fly while the others are grounded! Instantly switch to any of 17 frequencies—and each module is perfectly matched so you get maximum RF output without alignment problems!

5-Channel Transmitter
AS LOW AS
$144.95
Incl. 1-module

HEATHKIT PACK-17™ R/C gives you the performance and reliability every RC'er wants — PLUS build it yourself kit value! The transmitters, receivers and servos have the quality and reliability you NEED for serious R/C competition; the positive-action control sticks are smooth and responsive; and the easy-to-handle transmitters are compact and comfortable. Heathkit R/C is easy and fun to build too — with a thorough and complete instruction manual that even shows you how to solder. Buy and build Heathkit R/C gear — it's the winning way to fly!

1 5-Channel Dual-Stick Transmitter & 1 module. 2-stick control of 4 channels, plus 1 aux. channel.
Kit GDA-505-D, Shpg. wt. 6 lbs. **144.95**

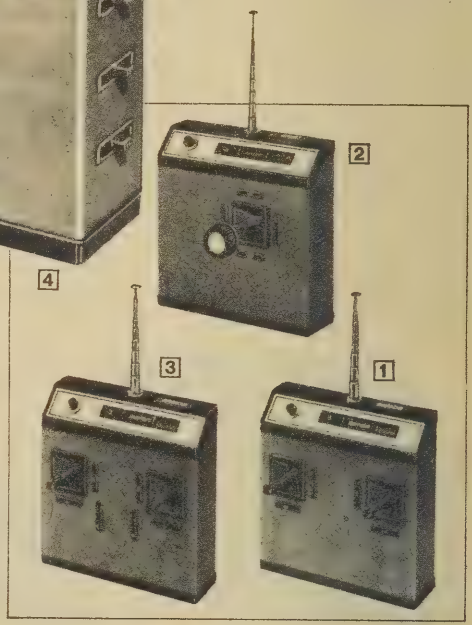
2 5-Channel Single-Stick transmitter & 1 module. 1-hand control of 3 channels, throttle control with trim & 1 aux. channel.
Kit GDA-505-S, Shpg. wt. 6 lbs. **154.95**

3 8-Channel Dual-Stick Transmitter & 1 module. Same as GDA-505-D, plus landing gear switch & 2 additional channels.
Kit GDA-1205-D, Shpg. wt. 6 lbs. **154.95**

4 8-Channel Single-Stick Transmitter & 1 module. Same as GDA-505-S, plus landing gear switch & 2 additional channels.
Kit GDA-1205-S, Shpg. wt. 6 lbs. **174.95**

Receiver & 1 module (less batteries).
Kit GDA-1205-2, Shpg. wt. 1 lb. **64.95**

Receiver battery pack.
Kit GDA-1205-3, Shpg. wt. 1 lb. **11.95**



GDA-1205 AND GDA 505 SERIES SPECIFICATIONS

TRANS. — **RF Frequency:** crystal controlled, all bands. **Frequency stability:** within ±.005% on 27 MHz; within ±.002% on 53 MHz, 72 MHz. **Temp. Range:** 0 to 160°F. **RF Output Circuit:** pi network. **RF Input Power:** at least 500 mW. **Modulation:** on-off carrier keying. **Approx. Current Drain:** 100 mA on all bands. **Controls:** GDA-1205, 8 channels (4 with trim), on/off, trainer button; GDA-505, 5 channels (4 with trim), on/off switch, trainer button. **Power Supply:** Internal 9.6V 500 mAH Ni-Cad. battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120 volt power line. **Dimensions:** 7″ H x 7″ W x 2″ D. **Net Weight:** 2½ lbs., with battery.

GDA-1205-2 SPECIFICATIONS

RECEIVER — **Local Oscillator Operating Frequency:** crystal-controlled, all bands. **Temperature Range:** 0 to +160°F. **Sensitivity:** 5 μV or better. **Selectivity:** 6 dB down at ±4 kHz; 30 dB down at ±9 kHz. **Current Drain:** 10 mA. **Intermediate Frequency:** 453 kHz. **Power Supply:** 4.8 V battery pack (GDA-1205-3). **Controls:** On/off switch. **Dimensions:** ⅝″ H x 1¾″ W x 1¾″ D. **Net Weight:** 2 ozs.

Additional Frequency Modules

When ordering specify frequency desired (see list below).

Transmit Module, Shpg. wt. 1 lb. **19.95**

Receive Module, Shpg. wt. 1 lb. **13.95**

FREQUENCIES AVAILABLE (MHz): 26.995, 27.045, 27.095, 27.145, 27.195, 53.1, 53.2, 53.3, 53.4, 53.5, 72.08, 72.24, 72.16, 72.32, 72.40, 72.96, 75.640 MHz. (When ordering, specify transmit or receive.)

SPECIAL 5-MODULE OFFER — SAVE $15!
5 Transmit and 5 Receive Modules of your choice — specify frequencies
Only $154.50 Shpg. wt. 6 lbs.

SAVE UP TO $95.80 — on complete 5 and 8-Channel Systems

5-Channel Dual-Stick
• Transmitter with 1 module • Receiver with 1 module • Receiver battery pack • Four servos (choose miniature, submini-ature or both). Shpg. wt. 27 lbs.
If purchased separately, up to **331.85**
GDS-505-D, System Price **264.95**

8-Channel Dual-Stick
• Transmitter with 2 modules • Receiver with 2 modules • Receiver battery pack • Four servos (choose miniature, submini-ature or both). Shpg. wt. 30 lbs.
If purchased separately, up to **375.75**
GDS-1205-D, System Price **299.95**

5-Channel Single-Stick
• Transmitter with 1 module • Receiver with 1 module • Receiver battery pack • Four servos (choose miniature, submini-ature or both). Shpg. wt. 27 lbs.
If purchased separately, up to **341.85**
GDS-505-S, System Price **264.95**

8-Channel Single-Stick
• Transmitter with 2 modules • Receiver with 2 modules • Receiver battery pack • Four servos (choose miniature, submini-ature or both). Shpg. wt. 30 lbs.
If purchased separately, up to **395.75**
GDS-1205-S, System Price **299.95**

When ordering, specify module frequencies and type(s) of servos.
All systems include batteries, a value worth up to $39!

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Uncompromised Performance and VALUE!

NEW LOW PRICE!

3-channel Pack-17™ with plug-in module versatility! Even includes rechargeable batteries

Now the convenience and versatility of plug-in frequency change is available in a basic 3-channel system — and it's the ONLY 3-channel system we know of that INCLUDES rechargeable batteries and an external charger so you fly with full power and uncompromised performance — you'll never have to worry about losing power with "dry cells" again! Has 2-axis stick assembly, easy to handle transmitter with convenient strap for one-hand operation. An optional conversion pack lets you go 4 channels by adding another channel to the stick. All three stick channels have trim control, the 4th channel is controlled by a thumb tab. Compatible with all Heathkit servos; ideal for use as trainer transmitter with GDA-1205 and GDA-505 systems. Specify frequency when ordering (see specs below).

Kit GDA-1405-1, 3-ch. transmitter with 1 Module. 5 lbs. **89.95**
Kit GDA-1405-3, 4-ch. conversion. 1 lb. **14.95**
Kit GDA-1205-2, receiver with 1 Frequency Module. 1 lb. **64.95**
Kit GDA-1205-3, receiver battery pack. 1 lb. **11.95**
Additional Frequency Modules: Shpg. wt. 1 lb.
Transmit .....**19.95** **Receive** **13.95**

Transmitter with one Module only
$89.95



GDA-1405-1 SPECIFICATIONS

TRANSMITTER — RF Carrier Frequency: One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz bands. Operating Temperature: 0°-160°F. Controls: 3 channels (two with trim); ON-OFF switch. Optional fourth channel. Power Supply: Internal 9.6V, 500 mA hours, nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35-40 mA from external charger. Frequencies Available: 27 MHz (11 meters) — 26.995, 26.045, 27.095, 27.145 & 27.195. 53 MHz (6 meters) — 53.100, 53.200, 53.300, 53.400, 53.500. 72 MHz (4 meters) for R/C planes only — 72.080, 72.240, 72.400, 75.640. (All Models — 72.160, 72.320, 72.960. Dimensions: 9½" H x 3 1/16" W x 2¼" D.

System with Miniature Servos

- *3-Channel Transmitter with one Frequency Module*
- *Receiver with one Frequency Module*
- *Receiver Battery Pack*
- *Two Miniature Servos*

Shpg. wt. 25 lbs.
If purchased separately, **$221.75**
GDS-1405-1 .....**$189.95**

System with Subminiature Servos

- *3-Channel Transmitter with one Frequency Module*
- *Receiver with one Frequency Module*
- *Receiver Battery Pack*
- *Two Subminiature Servos*

Shpg. wt. 25 lbs.
If purchased separately, **$221.75**
GDS-1405-2 .....**$189.95**

BUY THE SYSTEM AND SAVE $31.80

Complete 3-Channel Pack-17 R/C Systems.

When ordering, specify module frequency. Systems include batteries, a value worth up to $39!

Servos and Accessories for Heathkit R/C

[1] **Miniature Servo.** For use with all Heathkit R/C systems.
Kit GDA-1205-4, Shpg. wt. 1 lb. **27.50**

GDA-1205-4 SPECIFICATIONS

Input Signal: Pulse 1-2 msec. wide, 4 V P-P. Thrusts: 4 lbs. min. at rotor. Travel Time: 0.5 sec. Rotary Output Travel: 90° rotation. Temperature Range: 0°-160°F. Power Requirements: Battery — 4.8 VDC. Idle current — 15 mA maximum. Stall current — 450 mA; no load current, 80 mA. Gear Train Backlash: Less than .002". Mechanical Output: 1 rotary arm, 1 rotary wheel. Position Accuracy: 1.0%. Dimensions: 1 5/8" H x 13/16" W x 2 3/32" L (length includes mounting ears; height includes outputs). Net Weight: 1.75 ozs.

[2] **Sub-Miniature Servo.** For use with all Heathkit R/C systems.
Kit GDA-1205-5, Shpg. wt. 1 lb. **27.50**

GDA-1205-5 SPECIFICATIONS

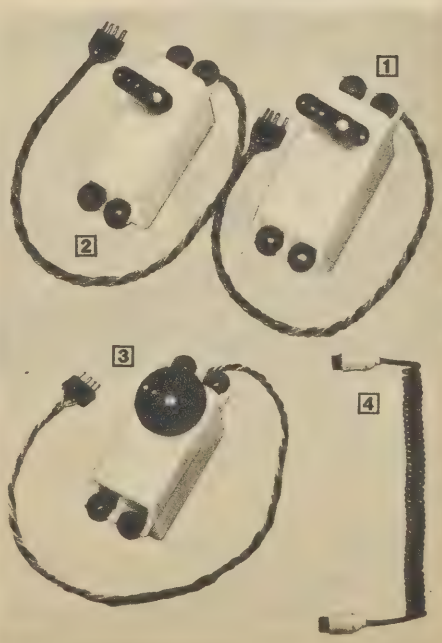
Power Requirements: Battery — 4.8 VDC. Idle current, 15 mA maximum. Stall current, 450 mA nominal; no load current, 80 mA. Mechanical Output: 1 rotary arm, 1 rotary wheel. Position Accuracy: 1.0%. Dimensions: 1 1/16" H x ¾" W x 2 3/32" L (length includes mounting ears, height includes the outputs.) Net Weight: 1.25 ozs. Other specifications same as GDA-1205-4 above.

[3] **High Torque Servo.** Quality low-cost servo for use with all Heathkit R/C transmitters and receivers. Features high power (torque) and fast transition (rotational speed) for use with most any R/C plane, car or boat. During assembly, you can wire the GDA-1205-8 to operate 90° for cars and boats; 180° for planes with retractable landing gear. Has heavy-duty gearing, rugged case for long life. Easy kit assembly too.
Kit GDA-1205-8, Shpg. wt. 1 lb. **29.95**

GDA-1205-8 SPECIFICATIONS

Input Signal: Pulse 1-2 msec wide, 4 V p-p. Torque: 38 in-oz. at rotor. Travel Time: 0.4 sec. Rotary output travel: 90° or 180° rotation. Temperature range: 0-160° F. Power Requirements: Battery, 4.8 V. Idle current, 20 mA maximum. Stall current, 1000 mA. No load current, 150 mA. Mechanical output: 1 rotary arm, 1 rotary wheel. Position Accuracy: 1%. Dimensions: 1 5/8" H x 13/16" W x 2 3/32" L. (length Includes mounting ears, height includes outputs). Net Weight: 1.75 oz.

[4] **Trainer link accessory.** Six-foot coiled cord connects two GDA-1205 or 505 Transmitters for in-flight instruction — one unit is "master" with override, the other is "slave."
GDA-1205-6, Shpg. wt. 1 lb. **11.95**



47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

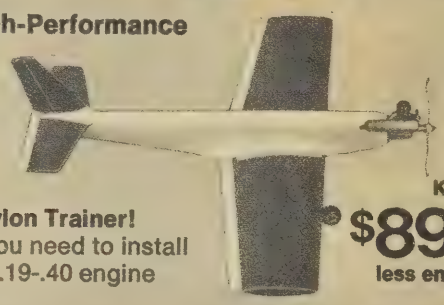
Here's "Model" value at low Heath prices

1 Hobie "Hawk" R/C Glider



KIT
$99.95

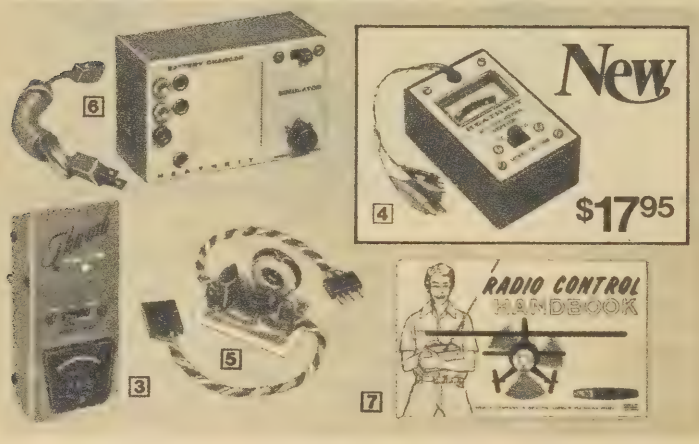
2 Delthon High-Performance R/C Plane



KIT
$89.95 less engine

Ideal Pylon Trainer!
Everything you need to install your own .19-.40 engine

Due to the nature of these products, the standard Heath warranty does not apply.



1 Build and fly the Hobie Hawk and you'll find out what the excitement of R/C is all about. Has strong 1/32" plywood main wing sheeting; 1/64" plywood stabilizer sheeting; ABS plastic root rib and tips, 98" wing span; 590 sq. in. wing area. Kit includes all parts and hardware needed for complete construction, you use your own covering materials and paints to "custom design" the Hawk to your preference. Ideal for use with Heathkit R/C control systems, especially the 3-channel systems described on page 83.

Kit RP-1206, Shpg. wt. 7 lbs. **99.95**
Semi-Kit RP-1207, just connect wings and tail, add R/C gear, and you're ready to fly. Shpg. wt. 7 lbs. **144.95**

2 A FUN-FLY plane designed for intermediate and advanced flyers. Unique symmetrical airfoil provides the lifting capabilities of a much larger conventional wing, combined with the characteristics of a high speed wing. The high strength plastics used in construction make the Delthon lighter than comparably-sized balsa planes, but much more rugged. Has 46½" wingspan, 33½" body. Kit includes tank, wheels, all hardware. Does not need additional covering materials or paint. Ideal for use with all Heathkit R/C systems. With detailed manual.

Kit RP-1028, Shpg. wt. 6 lbs. **89.95**

3 Thumb® Tach peaks performance. Measures model engine rpm without physical connection to engine. Two ranges — 0-5000 and 0-25,000. Perfect for needle valve adjustment, selection of glow plugs, gears and props.

Kit GD-69, Shpg. wt. 1 lb. **26.95**

4 NEW! R/C Battery Monitor. Lets you check capacity (under load) of flight batteries used in all Heathkit R/C, many others. Detects defective batteries, discharges batteries. Has meter, connector for all Heathkit battery packs, alligator clips for testing Nicads. Pocket case.

Kit GD-1188, Shpg. wt. 1 lb. **17.95**

5 Servo Centering Standard. Calibrates all Heath Servos with variable pots to 1.4 millisecond pulse width standard. Eliminates recentering when changing control units. Included in all Pack-17 transmitters!

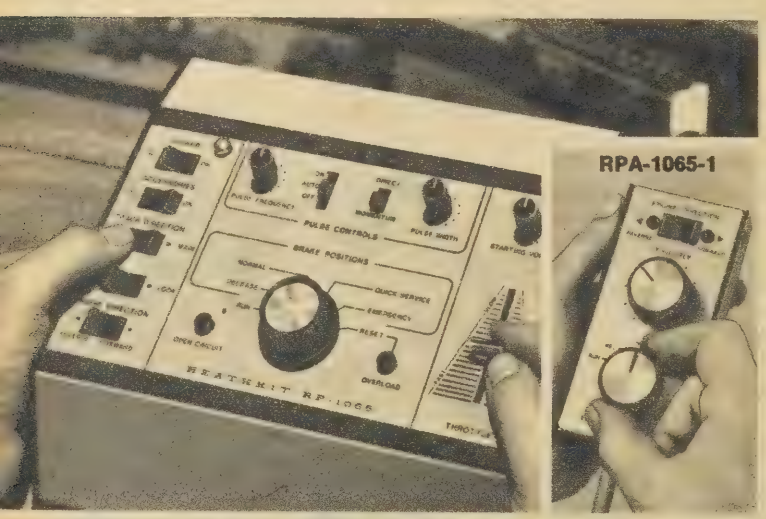
Kit GD-1189, Shpg. wt. 1 lb. **9.95**

6 Servo Simulator for easy adjustment. Takes the place of both transmitter and receiver for making adjustments on all Heathkit servos, and a wide variety of others. Operates servos from 120 VAC line or from the optional internal battery pack. Charges receiver and glo-plug batteries when plugged into 120 VAC. Bulb shows battery condition.

Kit GD-1053, Shpg. wt. 2 lbs. **29.95**
Kit GDA-19-3, optional battery pack, Shpg. wt. 1 lb. **4.95**

7 Radio Control Handbook. Comprehensive, detailed information on the use and maintenance of Heathkit R/C gear. Shows you how to get the most from Heath R/C gear, others too. **GDA-1205-7** **1.00**

See page 43 for other informative R/C books.



Walk-Around Controller for RP-1065

Provides remote operation of Throttle, Brake position switch and Engine direction switch, from approx. 20-ft. away from RP-1065.

Kit RPA-1065-1, Shpg. wt. 3 lbs. **24.95**

10-ft. Extension Cable. For operation to approx. 30-ft.
RPA-1065-2, Shpg. wt. 2 lbs. **8.95**

Special offer!
Order RP-1065 and RPA-1065-1 together, for only $106.95
If bought separately, $109.90

Heathkit Transistorized Power Supply/Throttle

$84.95 ***Get top performance from every engine in your line***

The Heathkit RP-1065 makes any HO or N-gauge layout dramatically more realistic! Just operate the slide throttle control to make your engines gradually build up speed just like a real train or, at slow speeds, maintain realistic acceleration and braking. Braking is independent of the throttle and controlled by a five-position knob. "Run" allows the train to gather speed until it reaches the throttle setting; "Release" maintains speed without accelerating or braking. Momentarily turning the knob to normal puts a short "burst of air" on the brakes; "Quick Service" and "emergency" brake the train more rapidly while still maintaining a realistic effect.

The RP-1065's load compensation circuitry prevents stalling out when climbing grades, even lets you precisely simulate a real train, slowing as it climbs, then accelerating as it goes down. Helps overcome side rod and gear train binding, tight spots in wheel bearings, even tight sections of track. Easily powers two HO or N-gauge engines — has built-in short protection with an indicator light and a time delay to prevent false triggering.

The RP-1065's pulse circuitry can be used three ways — on continuously, off or automatic. There's a starting voltage control, main and loop switches to reverse track polarity instantly, a forward/reverse switch for engine direction and two low-voltage AC accessory outputs, one with front panel on-off switch.

The RP-1065 goes together in just a couple of evenings, even if it's your first kit. There's just one circuit board to wire, and a plug-in IC simplifies assembly. Operates on 120 VAC. 4¾" x 9½" x 8½".

Kit RP-1065, Shpg. wt. 9 lbs. **84.95**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Do your own tuneups and save!



Super-bright xenon flash tube

Built-in meter measures distributor advance or engine RPM

$69.95

Available Late May



New CI-1096 Deluxe Timing Light with Built-in Advance Meter and Tachometer

Here's a really convenient, easy way to keep tabs on your car's engine timing and distributor advance functions. The CI-1096 incorporates a timing light, advance meter and tachometer in one compact, lightweight unit. Merely press the trigger to get a super-bright timing flash and a meter indication of distributor advance in degrees. Take your finger off the trigger and the meter indicates engine RPM. The 250° meter movement measures mechanical or vacuum advance up to 60° from 1500 to 4500 RPM and indicates engine speed to a maximum of 4500 RPM. Inductive pickup snaps around the #1 sparkplug wire for quick connection. Powered directly from your car's battery or from a separate 12VDC power supply. Functions with all types of ignition systems.

Kit CI-1096, Shpg. wt. 3 lbs. **69.95**

CI-1096 SPECIFICATIONS: **Useful Light Range:** Up to 2 ft. in daylight. **Triggering:** Current pickup coil. **Power Requirement:** 12VDC battery or separate 12VDC power supply. **Dimensions:** 7¼" H x 2⅝" W x 11½" D.

Deluxe Timing Light — brighter than daylight

$34.95



Keep your car properly timed for better driving efficiency, cleaner running, smoother performance and increased gas economy. Features a handy inductive pickup that snaps directly around the #1 spark plug wire without removing wire, using adapters, etc. (Recommended for GM-HEI and other systems, where high voltage may be present.) Has a super-bright xenon flash bulb that can be seen easily even outdoors. Can be hooked up while the engine is running, and won't interfere with other auto test equipment either. Comfortable pistol-grip handle, insulated blue-plastic housing. Polarity protected. Powered by your car's battery or a separate 12-volt supply. With all cables, pickup and clips.

Kit CI-1040, Shpg. wt. 3 lbs. **34.95**

CI-1040 SPECIFICATIONS: **Useful Light Range:** Up to 2 ft. in daylight. **Triggering:** Current pickup coil. **Power Requirement:** 12 VDC battery or separate 12 VDC power supply. **Dimensions:** 6½" H x 2" W x 10" L.

Three-In-One Tune-Up Meter Ideal for "Weekend Mechanics" or Pro's

ONLY $29.95

- ***Helps you keep your car in top shape for best operating performance and efficiency***
- ***Measures dwell, engine rpm and voltage on an easy-to-read color coded 4½" meter***
- ***Easy to use — just connect two leads to your engine***

Here's a compact and versatile tuneup meter that will help you save money every time you use it! The CM-1073 combines a distributor cam dwell meter, an electronic tachometer and a direct-current voltmeter in a single, compact unit that's easy and convenient to use. Measures dwell angle on most 4-cycle, 3, 4, 6 and 8-cylinder engines having conventional (Kettering) ignition systems. Shows engine RPM on two scales — 0-1500 RPM idle speed and 0-4500 RPM high speed. Checks voltage from 0-15 volts.

Can be used with both 6 and 12-volt electrical systems with positive or negative ground. (Not for solid-state ignition systems.) It has just two leads to connect to the engine and no batteries to run down — draws its power directly from car battery. Complete with leads, instructions and high-impact case. Easy kit assembly too.

Kit CM-1073, Shpg. wt. 4 lbs. **29.95**

CM-1073 SPECIFICATIONS: **Dwellmeter:** Three dwell scales: 8 cyl., 10-45 degrees; 4 cyl., 20-90 degrees; 6 cyl. & 3 cyl. x 2, 25-60 degrees. **Tachometer:** Two RPM ranges; Low range — 0-1500 RPM; High range — 0-4500 RPM. **Voltmeter:** Direct reading scale, 0-20 VDC. **Power Requirement:** 10 mA approximate average current. **Meter:** 4½", 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 4¼" H x 8½" W x 7¼" D.

Economy Solid-State Timing Light

Has the same fine features as CI-1040, but no inductive pick-up. Flash can be seen in direct sunlight. Easy to use: connect one cable to battery, the other to spark plug. Insulated housing, polarity protected. With all cables. For all OEM ignition systems.

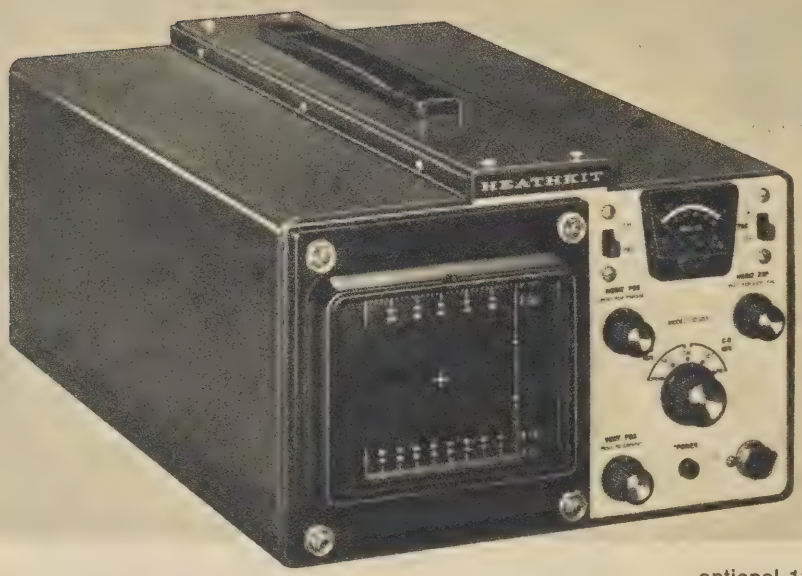
Kit CI-1020,
Shpg. wt. 3 lbs. **22.95**



ONLY $22.95

CI-1020 SPECIFICATIONS: **Useful Light Range:** Up to 2 ft. in daylight. **Power Required:** 12 VDC battery or 12 VDC supply. **Size:** ½" x 2" x 10".

Do your own auto tune-ups, save money



Diagnose ignition problems FAST on this 5″ scope

$164.95



Includes adapter that allows you to use the CO-1015 with GM High Energy Ignition Systems.

- ***Built-in rpm indicator***
- ***Clamp-on inductive pickup for easy hookup***
- ***Solves more problems, more quickly than meter type analyzers***

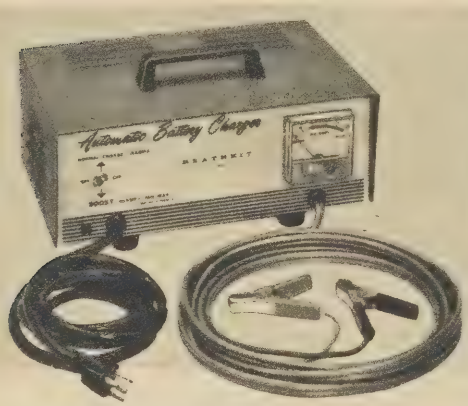
Locate ignition troubles the scientific way, not by "hit-or-miss" methods. The Heathkit CO-1015 Ignition Analyzer detects shorted spark plugs, bad ignition points, defective wiring, worn distributor parts, incorrect dwell angle, plus coil or condenser defects and transistor or capacitive discharge circuitry problems. Can be used with any standard, transistorized or capacitive discharge ignition system on four, six or eight-cylinder engines with distributors. It features a built-in tachometer, constant pattern width circuitry.

You select one of four different patterns — primary or secondary, in either parade or superimposed display. For detailed analysis, the horizontal sweep can be expanded 10 to 1, vertical sweep 2 to 1. The optional 12-volt inverter mounts permanently to the unit's rear panel, for portable or "on the road" tests. Includes adapter for use with General Motors High Energy Ignition systems. Operation handbook (supplied) illustrates typical auto engine waveforms to aid in your troubleshooting.

Kit CO-1015, Shpg. wt. 22 lbs. **164.95**
Kit COA-1015-1, 12-Volt Inverter, Shpg. wt. 3 lbs. **34.95**
WOA-5104-1, Assembled 12V Inverter, Shpg. wt. 3 lbs. **46.95**

CO-1015 SPECIFICATIONS

Power Requirement: 120/240 VAC, 60/50 Hz, 16 W. **RPM Range:** 400-5000. **Cylinders:** 3, 4, 6 or 8. **Vertical Expand:** Approx. 2 to 1. **Horizontal Expand:** Approx. 10 to 1. **Sweep Length:** ±5% over entire RPM range. **Intensity:** Fixed. **Presets:** Focus, Astigmatism, Trigger Adjust, Tach Cal. **Connection Cables:** 12′ pick-up clamp; ground and secondary clip leads extend 2′ beyond pick-up clamp. **Tachometer:** 0-1000 RPM, 0-5000 RPM ±5% of full scale. **Dimensions:** 7″ H x 10½″ W x 17½″ D.



15-Amp Automatic Battery Charger/Booster

Charges 12-volt car battery at 15-amp rate, boosts at 50-amp rate for quick start when battery is dead. Use on negative or positive ground. Circuit breaker protection.

Kit GP-1044, Shpg. wt. 22 lbs. **61.95**

GP-1044 SPECIFICATIONS

Charge Rate at 120 VAC (primary): Boost, 50 amperes (max. 1 minute). Normal, 15 amps. Shuts off automatically after battery is fully charged. **Output Voltage:** Shuts off when voltage at terminal reaches 14.5 V. **Power Requirement:** 110-130 VAC, 60 Hz. **Size:** 6⅛″ H x 11½″ W x 7¾″ D.



10-Amp Automatic Battery Charger

Keeps your car battery at full charge for easier starts. better performance! Won't operate unless correctly connected, can't overcharge the battery. Easy to use — just connect the cables to 12-volt battery terminals and plug into AC outlet.

Kit GP-21, Shpg. wt. 13 lbs. **42.95**

GP-21 SPECIFICATIONS

Charge Rate: 10 amperes maximum at 120 VAC line. **Output Voltage:** Between 13.2 VDC and 13.6 VDC. **Power Requirement:** 105-130 VAC, 60 Hz. **Dimensions:** 5½″ H x 9″ W x 6⅜″ D.



Small Engine Tune-up Meter

Ideal for garden tractor, lawn mower, motorcycle, snowmobile, outboard motors, etc. Tests volts, ohms, dwell & continuity on 1 to 4 cylinder, 2 & 4 cycle engines. Built-in tach, snap-on pickup. Less batteries. (Not for Briggs & Stratton engines.)

Kit CM-1045, Shpg. wt. 5 lbs. **44.95**

CM-1045 SPECIFICATIONS

Voltmeter: 0-20 V DC. **Ohmmeter:** 0 to 100 kΩ (10 kΩ center scale.) **Tachometer:** Two ranges: 0-3000 rpm, 0-15000 rpm. **Dwell Meter:** Four scales: 1 cylinder, 90°-360°; 2 cylinder, 40°-180°; 3 cylinder, 30°-120°; 4 cylinder, 20°-90°. **Power Source:** Three 1.5 V "C" batteries. **Dimensions:** 9⅛″ H x 9⅜″ W x 5¼″ D.

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

and time with Heathkit Auto Test Gear

Shows dwell, rpm, amps, volts, ohms, spark output, alternator and point condition

$79.95



Low-cost professional-grade Engine Analyzer

- ***Keeps your car running like "new" for big savings***
- ***Color-coded meter for easy "no-mistake" readings***
- ***3% accuracy on all ranges for precise measurements***
- ***Complete with all leads and accessories for complete tuneups***

This professional-grade instrument performs the tests you need to tune up your car for improved performance and best fuel economy. Tests conventional, magneto, transistorized, and most capacitive discharge ignition systems — both positive and negative ground, any voltage, on any 3, 4, 6 or 8-cylinder engine. The CM-1050 Analyzer permits rapid testing and servicing of the storage battery, generator or alternator, voltage regulator, starter, distributor, ignition circuit (points, condenser and coil), accessories and all the electrical wiring.

Easy to connect and use — makes home tune-ups a snap. The large 6" meter is color-coded for easy reading. Unlike most other engine analyzers, there is no need to recalibrate the unit between functions — all you do is turn the rotary switch to the desired range and you're ready to test. Accuracy is ±3% on all settings, over a wide range of operating temperatures. Operates on 3 standard "C" batteries (not supplied). Has convenient carrying handle. Comes complete with all leads and accessories, ready to build quickly and use.

Kit CM-1050, Shpg. wt. 8 lbs. **79.95**

CM-1050 SPECIFICATIONS

Voltmeter Ranges: 0-3.2 V DC. 0-32 V DC, ±3% of full scale. **Ohm-meter:** Two ranges: R x 1 (100 Ω center scale). R x 100 (10 kΩ center scale), ±3° arc. **Tachometer:** Two ranges: 0-1200 rpm, 0-6000 rpm, ±3% of full scale. **Dwell Meter:** Two ranges: 0-45° (on 0-60° scale). 0-60°, ±3% of full scale. **Amperes:** −5 to +90 amperes DC, ±3% of full scale. **Spark Output:** 0-50. **Point Resistance:** Good/Bad. **Alternator:** Good/Bad. **Condenser:** 0.22 μF, 10%. **Accuracy:** ±3% of full scale. **Cables Supplied:** Two 8" two-conductor test cables. One 2' alligator to alligator lead. One 2' alligator to push-on connector lead. One calibration cable. **Accessories Supplied:** 90-ampere shunt. 0.25 Ω resistor assembly. One insulation-piercing alligator clip. Two #10 solder lugs. (#14). **Dimensions:** 7½" H x 10½" W x 8¾" D.

Exhaust Gas Analyzer checks fuel efficiency

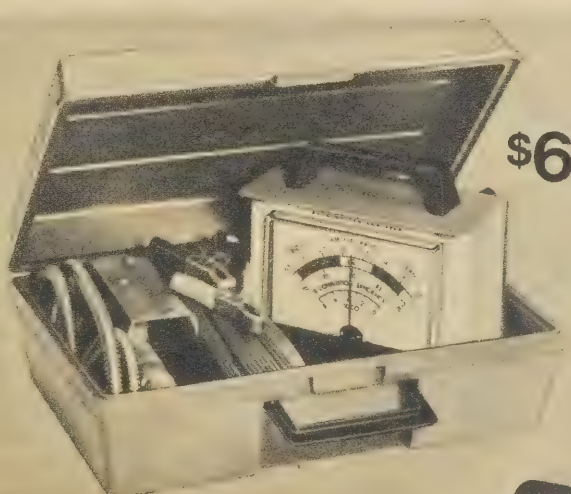
- ***Shows air-fuel ratio and percent of carbon monoxide***
- ***Helps you tune-up your car for peak performance***
- ***Includes all you need for fast and easy hookup***

Monitors your car's exhaust for minimum air pollution and maximum efficiency by measuring thermal conductivity of the exhaust gases. Shows the air-fuel ratio, combustion efficiency and the percentage of carbon monoxide in the exhaust. The CI-1080 is essential when you're tuning up a car which must meet specific requirements for exhaust emissions, or when you simply want peak operating efficiency. Comes with all cables and tubing for easy connection.

Kit CI-1080, Shpg. wt. 6 lbs. **69.95**

CI-1080 SPECIFICATIONS

Meter Scales (3): 11.5-15.0 Air-Fuel Ratio. 70%-90% Combustion Efficiency. 0-8% Carbon Monoxide. **Exhaust Type:** From 4-cycle gasoline engines. Not for use with catalytic converters. **Accuracy:** Within 1 Air-Fuel Ratio depending on fuel used. **Meter:** 4½", 100-0-100 μA. **Connectors:** Battery cord, 7 feet. Sensor cord, 21 feet. Exhaust flexible tube, 30 inches. **Power Requirement:** 6-volt or 12-volt car battery, less than 150 mA. **Weight:** 4 lbs., 12 oz.



$69.95

Hanson Basic Tester Set

Helps you keep your car in top shape! Includes Model 714 Remote Starter Switch, Model 715 Deluxe Compression Tester, Model 709 Vacuum/Fuel Pump Tester.

CGP-1036, Assembled. Shpg. wt. 2 lbs. **13.95**



GM Voltage Regulator Tester

Easy to use, fast and accurate! Shows condition of all 4 circuits in GM Delco Integral Charging System regulators. Simply insert regulator in self-heating holder, then follow procedure listed inside case top. Has single knob meter control, two indicator lights.

CTW-1170, Assembled, Shpg. wt. 15 lbs. **109.95**

CTW-1170 SPECIFICATIONS

Test Voltage: 16.5 VDC. **Sense Voltage:** Adjustable 0-17 VDC. **Voltmeter:** 0-20 VDC ±3%. **Short Circuit Current:** 0.1A. **Power Requirement:** 120 VAC, 60 Hz, 150W. **Case:** Aluminum. **Dimensions:** 7" H x 11" W x 7" D.



Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Enjoy your auto more with these kits

Heathkit Digital Electronic MPG Monitor/Speedometer $109.95

An important driving accessory for every car! The CI-1078 reads 0-99.9 miles-per-gallon and 0-99 miles-per-hour on bright amber-orange ½"-high digits. As a miles-per-gallon monitor it helps you save gas and money every time you drive, as an electronic speedometer it gives you a much more precise reading than conventional speedometers. Has a dimmer control to adjust the display for comfortable night driving, handsome die cast case with burl-grain vinyl insert. Includes all hardware for mounting in or under the dash, or on car's floor hump. **Please Note:** Ingenuity and good mechanical skill is necessary for transducer installation. You may wish to employ a qualified mechanic to install the transducers for you (fuel flow transducer installation involves cutting and removing a portion of the fuel line). Since every make and model of car is different, we cannot provide exact information for every car. The CI-1078 is not compatible with fuel injected engines or diesels. Heath cannot be responsible for damages, labor charges or replacement parts associated with transducer installation. When ordering, please specify make, model and year of your car. Be sure your car is included in the speed transducer listing below. We cannot provide information on other models.

Note: The kits below differ only in the speedometer transducer supplied. Order the one that fits your car.

CI-1078-1. For speedometer cable mounting on: '55-'68 Chrysler Corp. Cars. '55-'71 Chrysler Corp. trucks; '55-'68 GM cars (except Opel); '55-'71 GM trucks (except LUV); '55-'68 Ford cars; '55-'72 Ford Trucks (except Courier); '55-'71 American Motors Cars; '72-'76 Gremlin, Sportabout and Hornet; '55-'66-Studebaker; '55-'76 Jeep; '55-'76 English Ford. For Cruise Control mounting on '69-'76 Chrysler Corp. cars; '69-'76 GM cars (except Opel); '55-'76 Ford cars.

Kit CI-1078-1, Shpg. wt. 5 lbs. **109.95**

CI-1078-2. For transmission mounting on: '69-'76 GM cars (except Opel); '72-'76 GM trucks (except LUV); '69-'76 Chrysler Cars except Colt and Cricket; '72-'76 Chrysler trucks.

Kit CI-1078-2, Shpg. wt. 5 lbs. **109.95**



- ***Saves you gas and money every time you drive***
- ***Helps you get top performance and efficiency from your car***
- ***Reads mpg or mph at the flip of a front-panel switch***

CI-1078-3. For transmission mounting on: All Opel cars; '72-'76 Audi; '55-'76 BMW; '55-'76 Mercedes; '55-'76 Fiat; '55-'72 Saab; '55-'76 Volvo. For speedometer mounting on '55-'76 Porsche and VW.

Kit CI-1078-3, Shpg. wt. 5 lbs. **109.95**

CI-1078-4. For speedometer mounting on: '69-'76 Ford cars; '73-'76 Ford trucks (except Courier).

Kit CI-1078-4, Shpg. wt. 5 lbs. **109.95**

CI-1078 SPECIFICATIONS: **Display:** 3 digits, gas discharge. 0-99.9 miles per gallon. 0-99 miles per hour. **Controls:** Front — mpg/mph pushbutton switch, display dimmer. Rear — update control, mph calibration, mpg calibration. **Speed transducer:** DC generator, 0-1.5 volt output with accuracy of 3% of 1 volt. **Flow transducer:** Photo resistor sensor measures fuel flow, 1.5 to 12 gallons per hour with accuracy ±3% of maximum flow rate. **Electronics:** Accuracy, ±2% of maximum reading. **Temperature Range:** 0-60° C operating, −40° to +70° C storage. **Power requirements:** 10 to 17 VDC at 500 mA; 13.5 to 17 volts required to meet specifications. **Display unit dimensions:** 1⅞" H x ⅝" W x 4¾" D. **Display unit weight:** 2 lbs.

Improve performance and fuel economy with these low-cost auto aids



- ***Helps you get longer life from plugs and points***
- ***Assures fast, sure starts in all kinds of weather***
- ***Improves gas mileage to help you save money and energy***

1 Heathkit CD Ignition System

Get up to 50,000 miles between tuneups on cars, trucks, inboards, I/O & outboard marine engines with 12V battery/distributor/coil negative ground systems. Delivers a larger, more precisely-controlled, spark to the plugs to better burn the air-fuel mixture. Reduces problems caused by point bounce and wear. Improves the performance of even a brand new car. Further extends plug life and the tune-up interval. External override button switches to conventional system. Build it in a couple of hours, install in less than that. 3⅛" H x 3¾" W x 6" D.

Kit CP-1060, Shpg. wt. 3 lbs. **34.95**

2 Breakerless Ignition Adaptor

Develops a timing signal that isn't subject to mechanical problems of point wear and bounce. Replaces the points of all pre-1975 GM V-8 engines, and all AMC V-8s with external dwell adjustment (not for others). Easy-to-build unit mounts inside engine compartment; sensor mounts inside distributor, without removing points. Designed for operation only with Capacitive Discharge Ignition Systems such as the CP-1060 or similar units. Shpg. wt. 2 lbs.

Kit CP-1051 ..... **Was 49.95 Now 29.95**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Useful and convenient accessories for your car



$59.95

- ***More responsive and accurate than meter-type tachs***
- ***Helps you find the best operating efficiency for your car or boat engine***

Easy-to-build Digital Readout Tachometer

Reads your engine's RPM, even in direct sunlight, on the ½"-tall numeric display. The readout shows 1st 2 digits, multiply by 100 for actual rpm. A dimmer control adjusts the brightness for safe night-time driving. The CI-1079 operates with conventional ignition systems, capacitive discharge systems (like the Heathkit Model CP-1060), and factory electronic ignitions. For 4, 6, 8 cylinder 4-cycle engines; 2, 3, 4 cylinder 2-cycle engines; 2, 3, 4 rotor Wankels. Easy installation — simply connect the CI-1079 directly to the primary side of the ignition coil. For engines with magnetos or without access to the primary, order the optional inductive pickup below.

Kit CI-1079, Shpg. wt. 3 lbs. **59.95**

Kit CIA-1079-1, inductive pickup, Shpg. wt. 1 lb. **6.50**

CI-1079 SPECIFICATIONS: **Power Requirement:** 12 V, neg. gnd. only. **Readout Accuracy:** ±4% of reading, ±1 count. **Update Time:** 0.3, 0.2 or 0.15 seconds, depending on calibration point. **Size:** 1⅞" H x 4⅝" W x 4¾" D.



$69.95

- ***Quartz crystal timebase insures high accuracy***
- ***Readout dims automatically for safer night driving***
- ***Easy to use built-in elapsed timer for precise trip-timing***

Digital Car Clock with 20-hour Trip Timer

A totally electronic, totally reliable timepiece, typically accurate within one minute per month. Bright, easy-to-read ½"-high numerals display the time in hours and minutes. A built-in elapsed timer displays elapsed time in minutes and seconds, for the first 20 minutes. After that, the elapsed time is displayed in hours and minutes up to 19 hours — 59 minutes. "Clock/ET" button lets you display either clock time or elapsed time, while the other function continues in the memory. Built-in AM or PM indicator. Includes all hardware required to mount the unit on or under the dash of your car, boat, camper, or motorcycle. Die-cast case.

Kit GC-1093, Shpg. wt. 2 lbs. **69.95**

GC-1093 SPECIFICATIONS: **Power Requirement:** 10-17 VDC, neg. ground only. 300 mA max., display on. 30 mA max., display off. 4.5 volts minimum for clock memory. **Accuracy:** one min. per month, typical. **Temp. Range:** −30 to +60°C. **Format:** 12 hrs. with AM, PM and 20-hour rally timer. **Dimensions:** 1⅞" H x 4⅝" W x 4¾" D. **Net Weight:** 1 lb. 4 oz.



Windshield Wiper Delay

Ideal safety accessory for driving in light mist and fog. Eliminates constant wiper arm movement when an occasional sweep is sufficient. Lets you vary the time between sweeps. Molded plastic case mounts on or under dash.

Kit CH-1068, Shpg. wt. 2 lbs. **17.95**

CH-1068 SPECIFICATIONS — **Delay Interval:** 5 to 30 seconds minimum. **Sweeps interval:** .5 to 10 seconds minimum. **Input voltage:** 13.8 volts DC, ±20%. Positive or negative ground. **Wiper System Compatibility:** (Electric Only) GM: All single and two speed systems. Ford: Most small and intermediate models. Not compatible with full size models or '72-'76 Torino, or Montego, '74-'76 Cougar Chrysler: Single and two speed systems on small and intermediate models which do not use a motor reversing parking system. Ask dealer about your car's system. AMC: Single and two speed systems. Other models: Electric wipers which do not use a motor reversing parking system. NOTE: Heath does not supply automotive wiring diagrams for this unit.

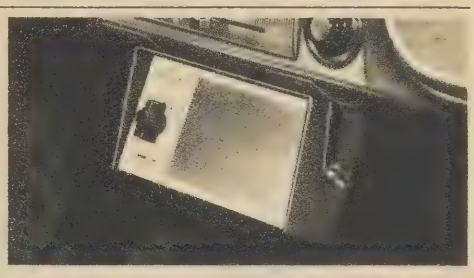


Emergency Strobe Light

The GD-1026 BELONGS in every car! It makes you visible so emergency help gets there quick! Just insert the adaptor plug provided into your car's cigarette lighter. A 12 ft. cord lets you place the flashing light in any spot on the car. Has non-marring magnetic base plate, highly visible flashing strobe with amber dome lens. High-impact plastic case is moisture and corrosion resistant, has storage for cable. Easy kit assembly.

Kit GD-1026, Shpg. wt. 3 lbs. **34.95**

GD-1026 SPECIFICATIONS: **Supply voltage range:** 13.8 VDC ±20%. **Power consumption:** 5 watts nominal. **Flash voltage range:** 450 VDC ±20%. **Flash repetition rate:** greater than 1 per sec. **Operational temperature range:** −30°C to +60°.





Cab-to-Camper Intercom

$35.95 • ***Includes Master, Remote and Cable***

Master selects "Standby", "Monitor" or "Talk" modes. Remote can initiate calls and has "Radio" position to bring music into camper from cab radio. Requires 12 volt, 250 mA power source. Shpg. wt. 5 lbs.

Kit GD-160, Master, Remote & Cable . . **35.95**

GDA-160-1, Accessory Plug. For quick disconnect when camper and cab are separated. Shpg. wt. 1 lbs. **4.95**

Make yourself heard with Heathkit PA/Siren Systems



$69.95 Kit

A Top-Performing PA at about HALF THE COST of other manufacturers' comparable models

Heathkit GD-18 Deluxe Mobile Siren/PA

As an electronic siren, the GD-18 boasts a full 55 watts of power. A manual "wail" button lets you override the PA function if you need the siren without resetting the function switch. When used as a PA system, the GD-18 amplifies your voice with a full 20 watts of power. The GD-18 can also be used as a radio call alert — so even if you're away from your vehicle, you can be alerted to important calls. Has push-to-talk noise-cancelling mike.

Select your choice of high-output speakers — either concealed or exposed horn. Concealed speaker requires 4½" x 4½" x 13" behind grille. NOTE: please check the required standards for mobile sirens in your area.

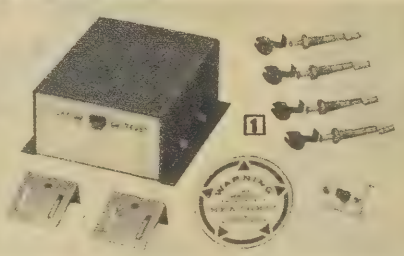
Kit GD-18, Shpg. wt. 6 lbs. **69.95**
Assembled WD-5130, siren/PA amp, Shpg. wt. 6 lbs. **99.95**
Assembled GDA-18-1, exterior horn, Shpg. wt. 10 lbs. **68.95**
Kit GDA-18-2, concealed horn, Shpg. wt. 10 lbs. **68.95**
Assembled WDA-5130-2, concealed horn, Shpg. wt. 10 lbs. ... **89.95**

Buy a complete system and SAVE!

If purchased separately, 138.90.
GD-18A (Kit GD-18 and Exterior Horn) Shpg. wt. 21 lbs. **126.95**
GD-18B (Kit GD-18 and Concealed Horn) Shpg. wt. 21 lbs. .. **126.95**

Heathkit Mobile Security System







Protect your entire car—engine, trunk, passenger compartment!

Ideal for cars with CB rigs, tape players, etc. Under-dash alarm set switch has a 5-15 second adjustable delay so you can enter or leave your car without sounding the alarm. An optional horn relay adapts the GD-1157 to cars whose horns do not use a relay or use a plug-in relay. Optional siren accessory provides attention-getting "yelp" sound instead of sounding the car horn. With all switches and hardware. Alarm unit, 2⅛" H x 4¾" W x 5" D. For 12 VDC negative ground only.

1 **Kit GD-1157,** Shpg. wt. 3 lbs. **29.95**
2 **Kit GDA-1157-1,** Optional Siren Accessory, 2 lbs. **21.95**
Kit GDA-1157-2, Optional Horn Relay (not shown). Shpg. wt. 1 lb. **2.95**



SAVE!

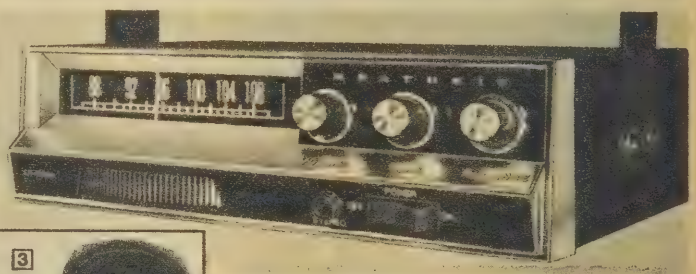
20-Watt Portable Megaphone/Yelp Alarm

The GD-1818 is a quality power megaphone for voice projection, with a built-in alarm that produces an attention-getting "yelp" sound. It's ideal for outdoorsmen, boat owners, fire and police departments, track and field coaches, etc. The noise-cancelling microphone is highly selective to amplify your voice only with minimum background noise. Turning on the "Yelp" switch produces a single downward wail each time you pull the trigger. A volume control sets the voice level. The GD-1818 can be wired for a continuous-tone, instead of the yelp sound, making it useful as a portable horn for boats, dune buggies, etc. Operates on eight "C" cells (not supplied). High-impact plastic case is spray resistant for use on water, and rugged enough for outdoor uses.

Kit GD-1818, Shpg. wt. 6 lbs. ..... **Was ~~89.95~~, NOW 79.95**

GD-1818 SPECIFICATIONS: **Power Output:** 20 watts peak voice power. **Yelp Alarm:** single downward wail with automatic shutoff. Optional continuous tone selected during construction. **Pilot Lamp:** indicates Yelp or continuous tone. **Power Source:** 12 volts (eight "C" cells). **Weight:** 4 lbs. 12 oz. with batteries. **Dimensions:** Horn end, 8¾" W x 6¼" H, 14½" long overall.

Heathkit CR-1000A FM Stereo Tuner





Put true hi-fi sound in your car

Offers the kind of performance you'd expect from a home system — less than 1% THD; frequency response ±1 dB, 30 to 15,000 Hz; 3 μV sensitivity; 60 dB selectivity; 40 dB nominal separation. Has phase-locked loop demodulator, muting circuit to eliminate noise between stations; AFC; stereo indicator light. Requires power amp. (below) for operation.

Kit CR-1000A, Shpg. wt. 7 lbs. **79.95**
Kit CRA-1000-1, Power amp., fits back of tuner, for 12V battery. Shpg. wt. 3 lbs. **34.95**
3 **CRA-1000-5,** 6" x 9" 4-ohm rear deck mount hi-fi speakers (including grilles and 24' speaker lead). Shpg. wt. 7 lbs. ..... (pair) **23.95**
4 **CRA-1000-2,** 4½", 4-ohm door-mount hi-fi speakers (including grilles, adapter plates for most speaker size openings and 24' speaker lead). Shpg. wt. 7 lbs. ..... (pair) **17.95**

There's built-in pride and satisfaction in every Heathkit product you buy.

Garage Door Openers Are Year 'Round Work-Savers



No longer a luxury, but an important home improvement that saves you strain and struggle... gives you added security and protection, too!

$174.95

Heathkit deluxe Garage Door Opener

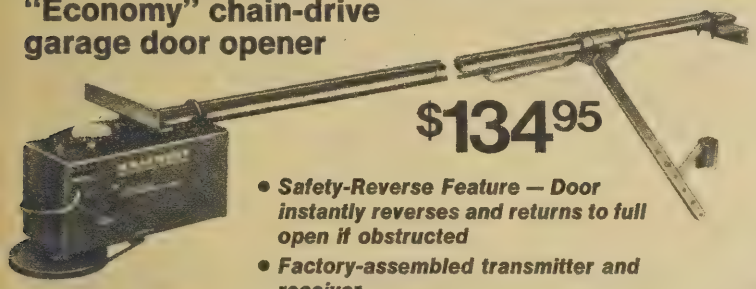
- ***Stop Fighting Heavy Garage Doors in Bad Weather***
- ***Extra Safety Too — Stay in your car until you're safely in the garage***
- ***75-Watt light stays on until you're safely in the house — then turns itself off — automatically***
- ***Safety-Reverse Feature — Door instantly reverses and returns to full open if obstructed***

The GD-3209 garage door opener BELONGS in every home with a garage... it's an investment that really pays off in time and labor saved, convenience and extra security. Simply touch the button on the wireless transmitter in your car — your garage door opens automatically and the garage light turns on. Drive into the garage, touch the button again, and the garage door closes behind you, but the light stays on long enough to see you safely in the house. Has a powerful ⅓ hp motor that opens even the heaviest residential garage doors (up to 7½′ maximum height) with ease. Its self-lubricating screw drive provides quiet, responsive operation and low-maintenance long life. The motor is housed in a rugged plastic case with the built-in time delay safety light. The adjustable slip clutch provides opening safety, stopping the door automatically if obstructed. When the door is closing, the important safety reverse feature takes over. If the door encounters ANY obstruction (car rear, garbage can, etc.), it stops and reverses instantly, and returns to full open position. Assembly is really easy. The transmitter and receiver units are fully wired, so there's absolutely no soldering! You put together the motor mechanism and install the unit on your door tracks. Connecting leads are pre-cut and pushbutton connectors are already installed. A separate doorbell-type switch and 20′ cable let you operate the unit from inside your house, or anywhere you may choose.

Kit GD-3209A, System w/1 transmitter, Shpg. wt. 45 lbs., Motor Frt. **174.95**
Kit GD-3209A, System w/2 transmitters, Shpg. wt. 46 lbs., Motor Frt. **189.95**
Kit GDA-3209-1, Mechanism only, Shpg. wt. 44 lbs., Motor Frt. **134.95**
Kit GDA-3209-2, Adaptor for jamb & pivot doors. Shpg. wt. 3 lbs. **11.95**
GDP-99, Transmitter, specify frequency, Shpg. wt. 1 lb. **21.95**
GDP-119, 1 transmitter, 1 receiver, Shpg. wt. 1 lb. **44.95**
GDP-129, 2 transmitters, 1 receiver, Shpg. wt. 2 lbs. **59.95**

GD-3209A SPECIFICATIONS: **Overall Size:** 120″ L x 12″ H x 9″ W. **Motor:** 117 VAC ⅓ HP. **Open and Close Time:** Approx. 12 seconds. **Mounting Clearance:** 3″ above highest point of door travel. **Safety Lamp:** Delay circuit keeps lamp on 1 to 3 minutes. **UHF TRANSMITTER:** Powered by standard 9-volt battery. **RF Frequencies:** 290 to 320 MHz, 340 to 400 MHz. **Useful Temperature Range:** −50°F. to +140°F. **UHF Receiver:** Powered by 24 VAC from opener mechanism. Usable on any mechanism having 24 volt AC NEC class II circuit. **RF Frequencies:** 290 to 320 MHz. **Temperature Range:** −55°F. to +140°F.

"Economy" chain-drive garage door opener



$134.95

- ***Safety-Reverse Feature — Door instantly reverses and returns to full open if obstructed***
- ***Factory-assembled transmitter and receiver***

Operates standard 7½′ track doors or jamb and pivot doors with GDA-309-2 adaptor, or "California" style doors with GDA-309-3 Speed Reducer Adaptor. Self-locking, automatic reversing, Quick-release pin. Includes "doorbell" button & wire for manual door operation.

Kit GD-309A, System with 1 transmitter, Shpg. wt. 50 lbs. **134.95**
Kit GD-309B, System with 2 transmitters, Shpg. wt. 51 lbs. **149.95**
Kit GDA-309-1, Mechanism only, Shpg. wt. 42 lbs. **104.95**
Kit GDA-309-2, Adaptor for jamb & pivot door, Shpg. wt. 2 lbs. **5.95**
Kit GDA-309-3, Adaptor for vertical-opening 1-pc "California" style doors, Shpg. wt. 4 lbs. **11.95**

(Order additional transmitters & receivers under GD-3209A below.)

NOTE: This economy opener is mailable — for lower shipping costs!

GD-309A SPECIFICATIONS: **Overall Size:** 123″ L x 10″ H x 8½″ W. **Motor:** 120 VAC ¼ HP. **Open and Closing Time:** Approx. 9 sec. for 7′ door. **Control:** Wall-mounted, doorbell-type pushbutton switch, or optional devices (transmitter-receiver, key switch, etc.). **Safety:** Door travel reverses instantly and returns to full open position when obstructed. **Overhead Mounting Clearance:** 2½″ above highest point of door travel. **Safety Lamp:** 60 watts. Automatically turns on when the door is fully open and stays on until door starts to close. **Specifications:** Same as GD-3209A right.



Up-Down Limiters
Permanently installed limiters let you adjust amount of door travel so door coasts smoothly to proper position, open or close.



Fully assembled transmitter
Portable transmitter is factory assembled and adjusted. Has range up to 150′. (For use with Heathkit systems only).



Fully assembled receiver
Solid-state UHF receiver is factory assembled and adjusted, in a rugged enclosed case for long-life and low-maintenance service.

Assembled transmitters and receivers listed in order numbers above are FCC certified as Heathkit Model Nos. 30 and 38.

There are 47 Heathkit Electronic Centers coast to coast (Units of Schlumberger Products Corporation)

Check the white pages of your telephone directory for address and phone no.

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DISTRIBUTORS IN ALASKA:
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Minneapolis (Hopkins)

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Philadelphia
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Dallas
Houston

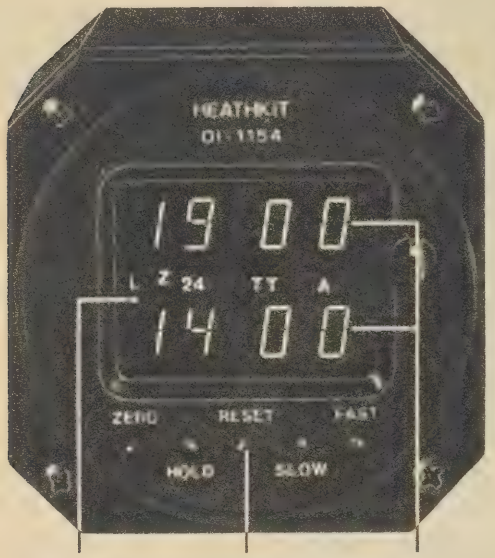
VIRGINIA
Norfolk
(Virginia Beach)

WASHINGTON
Seattle

WISCONSIN
Milwaukee

Opening Soon:
Alexandria, Virginia

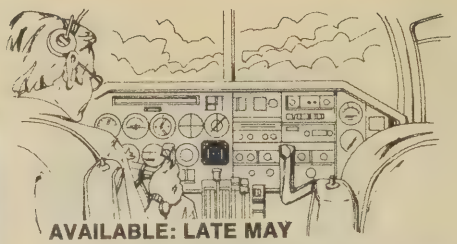
New High-accuracy, low-priced Aircraft Clock/Timer



Function selector with LED "moving dot" indicator

Easy-access pencil-tip pushbutton clock controls

4-digit red LED displays with automatic dimming



AVAILABLE: LATE MAY

5 FUNCTIONS

- ***Indicates GMT, local time — times to 24 minutes and 24 hours, preset alarm too***
- ***FAA/PMA Approved, Meets DO-160 requirements***

$159.95

An important instrument for any pilot — gives you the accuracy and reliability you NEED for any flight timing function, at about HALF THE COST of competitive models! All timing functions are quartz-crystal controlled for exceptional accuracy. The upper 4-digit display shows 24-hour GMT or ZULU time; the lower display shows the function you select: local time, 24-minute timer (displays minutes and seconds), total trip timer (24 hours max.); and an alarm time that you have stored in the memory of the trip timer. This alarm time function is for fuel management or check point notification. Displays dim automatically for night flying. The OI-1154 fits a standard 3⅛" instrument panel for easy mounting in most any aircraft. It can be counted on for consistently accurate performance. And at this low price, it's an outstanding value.

Kit OI-1154, Shpg. wt. 3 lbs. **159.95**

Note: FAA approved for Cessna 172, STC No. issued (requires FAA Form 337). Field approval on FFA Form 337 required for other aircraft. Completed kit must be returned to a Heathkit Electronic Center or factory for DMIR inspection (at no additional charge), before installation by an A & P mechanic (or supervised pilot installation). Heath will also set adjustment for maximum accuracy. Meets DO-160 environmental requirements.

OI-1154 SPECIFICATIONS: Display Functions: (Top), 24 hour Zulu or GMT; (Bottom), 24 hour local, 24 minute timer (in minutes and seconds); 24 hour total trip time; 24 hour trip time alarm. Input Voltage: 14 VDC or 28 VDC. Input Current: 0.5 A max. (bright display). Crystal Oscillator Accuracy: Typical, less than ±1 minute per month. Initial, .004% at 25°C. Drift, ±.003%, −20°C to +65°C. Aging, .002% per year. Dimensions: 3.3" x 3.3" x 6" deep.

Programmable Digital Stopwatch-Unique and Useful!

Used by coaches and timers of the United States International Skating Association.



$89.95

The world's most versatile stopwatch

For features, versatility and accuracy, we don't think you can find a better stopwatch than our GB-1201! Two exclusive Heath PMOS IC counters and quartz crystal accuracy make it ideal for almost any timing job. Reads hours, minutes, tens and hundredths of seconds in a bright red digital readout that's easy to see in most any light. We even include a sunscreen so you can read it in direct daylight!

Includes pre-wired AC adapter/charger, rechargeable batteries, sunscreen, lanyard for wearing the GB-1201 around wrist or neck. Special modification instruction lets you convert the GB-1201 to read hundredths of minutes — perfect for car rallies and time studies.

Kit GB-1201, Shpg. wt. 2 lbs. **89.95**

ICA-2009-1, Felt-lined Naugahyde® carrying case, Wt. 1 lb. **4.95**

GB-1201 SPECIFICATIONS: Accuracy: ±0.006%, typically better than 0.003%. Instrument alignment provides higher accuracy. Battery Life: approx. 40 hrs. between charges with displays mostly off; approx. 4 hrs. with displays continuously on. Recharging: approx. 14 hours with power off. Temperature Range: −10° to +120°F. Dimensions: 5⅓" H x 2¼" W x 2" D. Net Weight: approx. 8 oz.

Seven Functions Time Any Event



1. Start/Stop Elapsed Time: Times individual events while also counting total elapsed time from beginning of first event to end of last. Like having two stopwatches in one.

2. Sequential Timing: Times and displays each part of event (i.e. each lap), while timing overall event. Compares lap times of participants — great for multilap races, navigation, horse training.

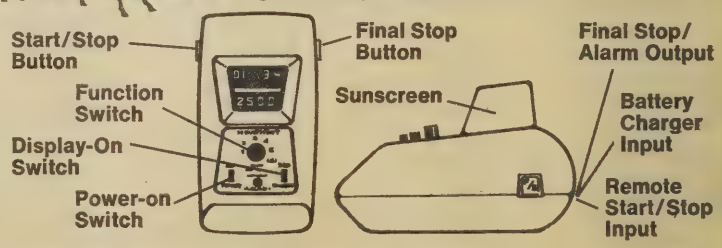
3. Total Activity Time: Accumulates elapsed time for any series of events, while maintaining a separate count of total elapsed time including down time or breaks. Great for auto and plane trips, efficiency studies, ball games.

4. Split Time: Displays cumulative time to each "split" point, while continuing to time overall event. For ski races, swim meets, sail boat committees.

5. Start/Stop Activity Time: Shows separate times for each event or "leg", then totals all individual times. For trips, races, rallies.

6. Upcount to Preset Time: For use with external alarms — counts up to pre-programmed times, then sends trigger pulse to alarm jack. Count can be interrupted and resumed at any point. Times can be transferred from other functions, or programmed by a digit-set method.

7. Downcount from Time: Counts down from pre-programmed time to zero, then sends trigger pulse to alarm jack. For yacht racing, testing, officiating, pacing oneself in training. Time can be transferred from other functions, or programmed by a digit-set method.



Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Our best receiver value!

Spectacular Heathkit Receiver SAVINGS!



Shown in optional case.

Was ~~$359.95~~ in August 1976 Now $289.95

Heathkit AR-29 AM/FM Stereo Receiver for cost-conscious connoisseurs

35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

The AR-29 AM/FM stereo receiver is a best-seller that offers you no-compromise performance — and now it's priced even lower for even better value. Its overall quality design, along with conservative specifications, assures a level of performance normally associated with far more expensive units. Has pushbutton function selectors, slide controls, FM muting and stereo blend, tape monitor and main/remote speaker switching. Tuning is as easy and accurate as you could want, with a wide, clearly marked slide-rule tuning dial and two meters; signal strength for both AM and FM, center channel for FM. Special level controls for each channel of all inputs let you switch from phono to tuner to tape without changing volume. The AR-29 provides as much power as you're likely to need for most listening areas with about half the distortion of many competitive models. Intermodulation distortion is extremely low too; less than 0.2% at full power and less than 0.1% at 1 watt. As the audio experts have noted, the AR-29's sound is solid, clean and well-defined, which is what hi-fi is all about. Kit assembly is easy and fun — most parts mount on printed circuit boards that simply plug into the unit, and a pre-assembled harness with individual wires stripped and cut to length further simplifies construction. A built-in meter, with test probes and function switch, lets you check yourself every step of the way during assembly, and aids in servicing. With black metal cabinet, order wood case (illustrated) below.

Kit AR-29, Shpg. wt. 34 lbs. .....**Was 359.95...NOW ONLY 289.95**

Pecan-Stained Veneer Case.

AE-19, Shpg. wt. 10 lbs. **24.95**

AR-29 SPECIFICATIONS: AMPLIFIER — Frequency Response: —1 dB, 7 Hz to 60 kHz. IM Distortion: 0.2% at 35 W, 0.1% at 1 W. Input Sensitivity: Phono: 2.2 mV. Tape, Aux. and Tape Mon., 180 mV. Hum and Noise: Phono (10 mV ref.), —65 dB. Tape & Aux. (0.25 V ref.), — FM Sensitivity: 1.8 μV*. Selectivity: 70 dB*. Image Rejection: 90 dB*. Capture Ratio: 1.5 dB*. AM Suppression: 50 dB*. Harmonic Distortion: 0.5%*. Spurious Rejection: —90 dB*. Antenna: 75 or 300-ohm. Channel Separation: Typically 45 dB at mid-frequencies. SCA Suppression: 55 dB. — AM SECTION — AM Antenna: Adjustable rod. Connections for external ant., gnd. Sensitivity: External antenna, 20 μV at 1000 kHz for 20 dB S+N/N. Selectivity: 40 dB at 20 kHz. Image Rejection: 60 dB at 600 kHz*. 45 dB at 1400 kHz*. Power Requirement: 120/240 VAC 60/50 Hz. Dimensions: 5¼" H x 16¾" W x 14½" D.
*Rated IHF (Institute of High Fidelity) Standards.

Get Superb Sound and big Savings with this complete AR-29 System



If purchased separately, $582.60
SAVE UP TO $65.09

System Price $517.51

- *Heathkit AR-29 AM/FM Stereo Receiver with Wood Case*
- *Two Heathkit AS-1332 Speakers*
- *B·I·C 920 Automatic Turntable with Base, Dust Cover and Shure M75ECS Stereo Cartridge*

ARS-120, Shpg. wt. 149 lbs., mailable 517.51
Please specify cartridge when ordering.

Top-Performing AR-29 System gives you BETTER SOUND for your money



If purchased separately, $841.65
SAVE UP TO $124.64

System Price $717.01

- *Heathkit AR-29 AM/FM Stereo Receiver with Wood Case*
- *Two Heathkit AS-1344 Column Speakers*
- *B·I·C 960 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/III Stereo Cartridge*

ARS-121, Shpg. wt. 202 lbs., UPS 717.01
Please specify cartridge when ordering.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Our best stereo receiver ever—



70 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.08% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

And look at these other impressive specifications!

AMPLIFIER — Frequency Response: +0, −1 dB, 8 Hz to 45 kHz; +0, −3 dB, 4 Hz to 80 kHz. **Intermodulation Distortion:** less than 0.08% from 0.25 to 70 watts (full output). **Damping Factor:** Greater than 60. **Input Sensitivity:** Phono 1 & 2, 2 mV. Aux., Tape & Dub., 200 mV. **Input Overload:** Phono: greater than 100 mV, Aux., Tape & Dub., greater than 10 V. **Hum and Noise:** Phono (2 mV reference), −65 dB. Aux., Tape & Dub., (200 mV reference) −80 dB. **FM (Monophonic): Frequency Response:** ±1 dB, 20-15,000 Hz. **Antenna:** 75 or 300 ohm. **Sensitivity:** 1.8 μV*. **Selectivity:** 100 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.3 dB*. **AM Suppression:** 65 dB*. **Harmonic Distortion:** 0.3%. **Intermodulation Distortion:** 0.1%. **Signal to Noise Ratio:** 70 dB*. **Spurious Rejection:** 90 dB*. **Mute Threshold:** 0-5 μV variable. **FM (Stereophonic). Channel Separation:** 40 dB or greater at mid-frequencies; 35 dB at 100 Hz; 20 dB at 10 kHz 20 dB (nominal) at 15 kHz. **Harmonic Distortion:** 0.35% with 100% modulation. **19 and 38 kHz Suppression:** 60 dB. **SCA Suppression:** 60 dB. **AM: Sensitivity:** 5 μV with 50 -ohm direct input. **Selectivity:** 20 dB at 10 kHz. **AM Antenna:** external static-shielded loop. **Image Rejection:** 70 dB at 600 kHz. 50 dB at 1400 kHz. **GENERAL: Accessory AC Outlets:** One switched and one unswitched. **Power Requirement:** 120/240 VAC, 50/60 Hz. **Dimensions:** 21½″ W x 6¾″ H x 15″ D. **Net Weight:** 35.8 lbs.
*Rated IHF (Institute of High Fidelity Standards).
Dolby is a trademark of Dolby Laboratories.

Choose one of these carefully-matched AR-1515 systems for a lifetime of superb listening!

Save up to $134.39 — **System Price $902.31**



- *Heathkit AR-1515 Stereo Receiver*
- *Two AS-1352 Speakers*
- *B·I·C 960 Turntable with Base and Choice of Shure M91ED or Empire 2000E/III Cartridge*

ARS-125, Shpg. wt. 194 lbs.
UPS 902.31

If purchased separately, up to $1036.70

Save up to $139.39 — **System Price $997.31**



- *Heathkit AR-1515 Stereo Receiver*
- *Two AS-1344 Speakers*
- *B·I·C 980 Turntable with Base and Choice of Shure M91ED or Empire 2000E/III Cartridge*

ARS-126, Shpg. wt. 200 lbs.
UPS 997.31

If purchased separately, up to $1136.70

Save $142.00 — **System Price $1297.80**



- *Heathkit AR-1515 Stereo Receiver*
- *Two AS-48 Speakers*
- *Dual CS-721 Turntable with Base, Dustcover and Shure V 15 III Cartridge*

ARS-127, Shpg. wt. 208 lbs.
UPS 1297.80

If purchased separately, $1439.80

Please specify cartridge when ordering systems above.

Heathkit AR-1515



The AR-1515 has everything you could want in a stereo receiver; precision digital readout, incredibly low distortion, functionally elegant styling and much more!

It's the only receiver at anywhere near this price that gives you digital frequency readout AND it provides performance equal to the finest separate components.

Over three years ago we gave our engineers a challenge: to design a totally new stereo receiver. A component which would set new standards for the industry.

They succeeded. To the dedicated music-lover, the AR-1515 offers exceptional specifications — massive power combined with vanishingly low distortion, a superlative FM section and an AM section which deserves to be called "hi-fi".



A flip-down panel reveals the AR-1515's secondary controls.

Only $569.95

AR-1515 Digital AM/FM Stereo Receiver — a new standard in convenience and performance

From its half-inch tall LED frequency readouts to its extraordinarily low distortion, the Heathkit AR-1515 is the finest receiver Heath has ever designed. Unquestionably, it is one of the world's finest audio components.

The AR-1515's digital readout is far more accurate and easy to use than conventional dial-type tuning. Simply tune to the exact frequency you want. Signal-strength and center-channel meters then help you "zero in" on the strongest signal and lowest FM distortion. There's even an oscilloscope output to monitor multipath distortion.

But digital readout is only the beginning. With 1.8 μV sensitivity, the FM section is one of the world's finest. The optional AD-1504 Dolby Module allows you to enjoy the reduced noise and increased dynamic range of Dolbyized FM broadcasts. The AM section is probably the finest in *any* receiver — dual-gate MOSFET's in the front end and a computer-designed 9-pole filter for outstanding selectivity without periodic realignment.

The amplifier section meets the same high standards. Harmonic distortion is an infinitesimal 0.08% — a figure unsurpassed by any other receiver in the world! Frequency response is +0, −1 dB from 8 Hz to 45,000 Hz and +0, −3 dB from 4 Hz to 80,000 Hz! That extra margin of performance assures clean, wide-range sound without audible strain or struggle on even the most complex musical passages. And you'll hear the music over a background of silence — hum and noise are 65 dB below full output in phono and 80 dB below full output on high-level sources.

The amplifier section is also unmatched in convenience. All the frequently-used controls — volume, input selector, stereo/mono switch, tuning — are on the front panel. The secondary controls (which clutter the front panels of many receivers) are concealed behind a hinged door — main and remote speaker switches, headphone jack, balance, bass and treble, FM muting and stereo blend, subsonic and high-frequency filters, tone-flat, dubbing inputs and outputs and more. All are convenient when you need them and out of the way when you don't. Convenient indicator lights in the black-out section of the front panel instantly show the input you've selected and which switches are engaged. In the same functional way, the digits light only when listening to AM or FM and only the necessary tuning meters are illuminated — signal-strength only for AM, signal-strength and center-tune for FM.

The bass and treble controls have been specially designed to act primarily at the frequency extremes, allowing you to compensate for room acoustics and program deficiencies while maintaining smooth midrange response. For even greater versatility, the AR-1515's pre-amp out/amp in jacks allow it to be used with any high-quality audio equalizer, such as the Heathkit AD-1305.

The AR-1515's styling is both elegant and functional. The massive brushed aluminum front panel is accented by an attractive, diecast Heathkit logo and by luxurious solid walnut end-panels.

The AR-1515 is even easy to build! Obviously the AR-1515 is a complex and sophisticated receiver, but its well thought out, modular design and color-coded wiring harnesses simplify assembly. There's even a separate test meter to double-check your work each step of the way. Finally, the illustrated, step-by-step assembly manual makes it easy for even a novice to assemble the AR-1515.

The receiver of the future... today! There's never been a receiver quite like the Heathkit AR-1515. It combines beauty, convenience, superb performance and value. And, in doing so, it redefines the state of the art. If you want the best for your audio system, it's the receiver you should own.

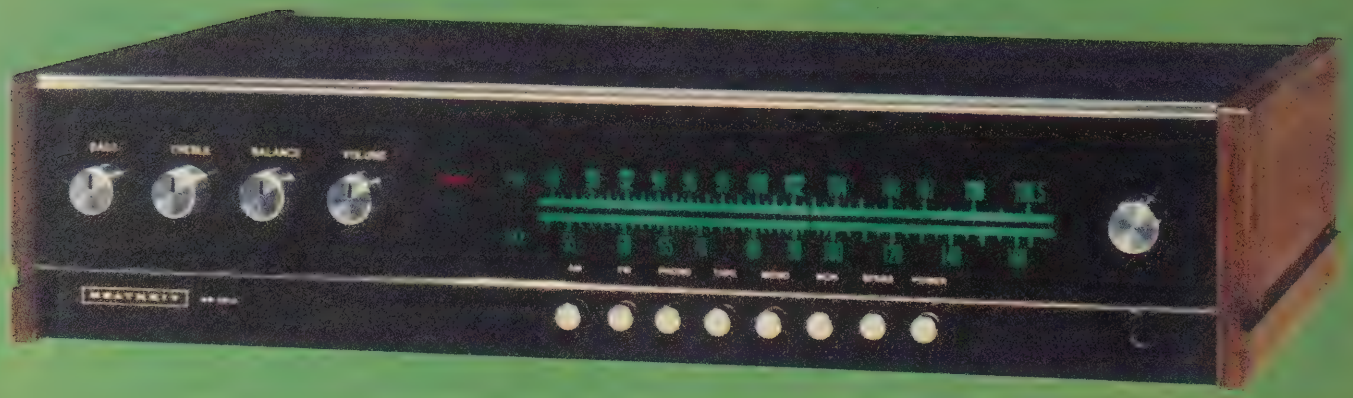
Kit AR-1515, Shpg. wt. 46 lbs. **569.95**

Dolby FM Module. Enjoy the reduced noise and increased dynamic range of Dolbyized FM broadcasts. Assembles and installs in one evening.

Kit AD-1504, Shpg. wt. 2 lbs. **49.95**

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

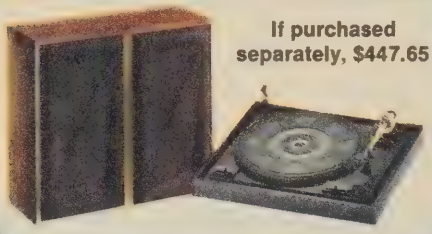
Sensational Spring Stereo SALE!



Save $57.70

- *Heathkit AR-1214 AM/FM Stereo Receiver*
- *Two Heathkit AS-1332 Speakers*
- *B•I•C 920 Automatic Turntable with base, dust-cover and Shure M75ECS Stereo Cartridge*

ARS-118, Shpg. wt. 116 lbs.
mailable **389.95**



If purchased separately, $447.65

Save up to $116.75

- *Heathkit AR-1214 AM/FM Stereo Receiver*
- *Two Heathkit AS-1352 Speakers*
- *B•I•C 960 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/III Stereo Cartridge*

ARS-119, Shpg. wt. 166 lbs.
mailable **529.95**



If purchased separately, $646.70

Please specify cartridge when ordering.

SAVE $30 on Heathkit AR-1214 AM/FM Stereo Receiver

Reg. ~~$209.95~~ Now Only **$179.95** **YOU SAVE $30!**

Now — more than ever — the AR-1214 gives you more for your money.

Here's a receiver that will have you really enjoying your favorite music, at a price you can easily afford — has the features, power and versatility usually found only in receivers costing far more.

The AR-1214 brings you full fidelity AM, FM and stereo FM reception; also has inputs for magnetic phono and tape so you can have a complete and versatile home entertainment setup. Has power enough for solid bass even from inefficient speakers; advanced phase-lock-loop FM stereo circuit for wide stereo separation and minimum distortion: a factory assembled and aligned FM front end which assures 2 μV sensitivity to really pull in FM stations.

Features include: tape monitor, for professional-quality recordings with 3-head tape decks, pushbutton input and mode selection, speaker on-off button, stereo headphone jack, flywheel tuning with stereo indicator light. Inputs for a 75 or 300 ohm FM antenna and a built-in swivel-mounted AM antenna help you get the best reception even from weak stations. The extra-wide slide-rule tuning dial assures easy and accurate tuning for both AM and FM.

The AR-1214 is an easy kit to build too, just three PC boards, a wiring harness, and an open chassis layout for easy installation of components. The famous Heathkit manual makes it ideal even for first-time kit builders. Stylish "black-out" front panel and case with walnut-veneer end panels make it a handsome addition to any decor.

Kit AR-1214, Shpg. wt. 18 lbs. . .**SALE 179.95**

15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

AR-1214 SPECIFICATIONS: AMPLIFIER — **Frequency Response:** ±1 dB, 7 Hz to 100 kHz. **IM Distortion:** less than 0.5%, full power; less than 0.2% at 1 watt. **Hum and Noise:** Phono, 60 dB; Tape, —65 dB. **FM SECTION — Sensitivity:** 2 μV*. **Selectivity:** 60 dB*. **Image Rejection:** 50 dB*. **Stereo Separation:** 40 dB typ., 35 dB minimum. — **AM SECTION — Sensitivity:** 100 μV per meter*. **Selectivity:** 40 dB. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅞" H x 17" W x 13" D.
*Rated IHF (Institute of High Fidelity) Standards.

Get quadraphonic excitement with the Heathkit AR-2020 4-Channel AM/FM Receiver

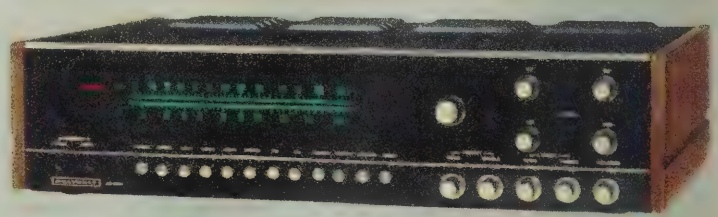
15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 Hz.

- ***Matrix decoder is optimized for SQ† 4-channel sound***
- ***Costs little more than many stereo receivers!***

Get in on the spacious and dramatic sound of 4-channel at a sensational low build-it-yourself price. The AR-2020's low-distortion amplifier puts out plenty of power; the AM and FM tuner sections pull in stations far and near. Has preassembled and aligned FM front end, built-in matrix decoder for all 4-channel encoded sources; inputs for both stereo and discrete 4-channel auxiliary sources, full inputs and outputs for a 4-channel tape recorder. Individual volume controls for each channel. There are 2/4-channel headphone jacks; bass and treble controls for front and rear channels; easy-action flywheel tuning with stereo indicator. Good looking case with vinyl clad steel top and walnut-veneer end panels.

Kit AR-2020, Shpg. wt. 32 lbs. **239.95**

Kit AA-2005A, Amplifier section of AR-2020.
Shpg. wt. 28 lbs. .....**Was 159.95 in March '75 Cat. Now 99.95**

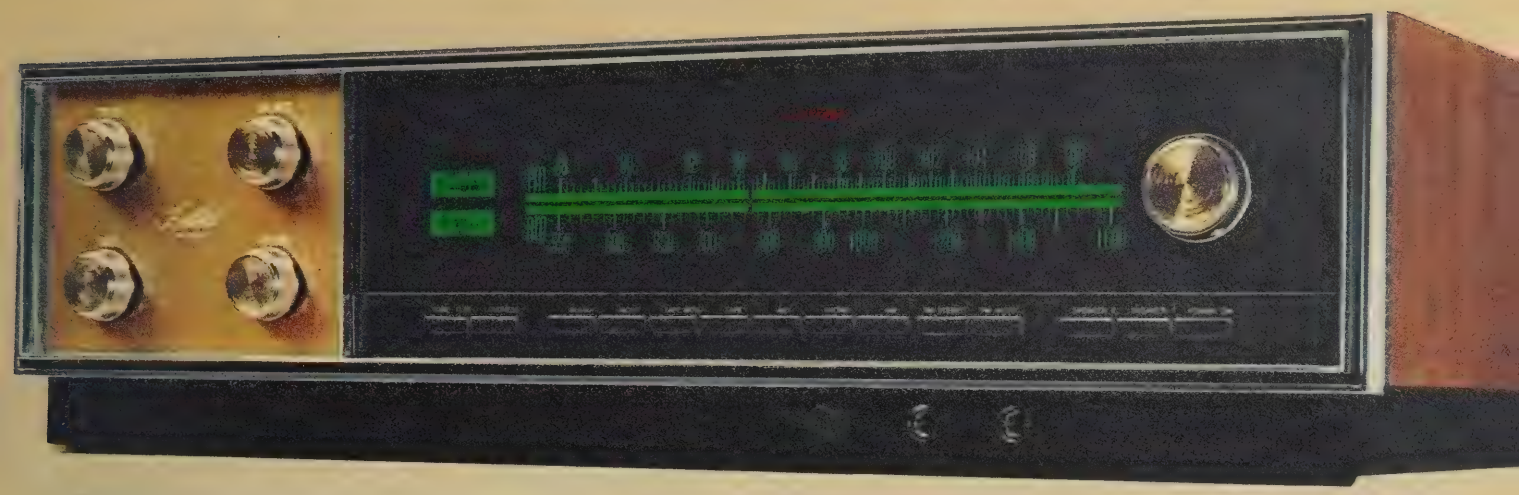


$239.95

AR-2020 SPECIFICATIONS: AMPLIFIER — **Frequency Response:** ±1 dB, 7 Hz to 50 kHz. **IM Distortion:** less than 0.5% at full output, less than 0.25% at 1 watt. **Input Sensitivity:** Phono, 2.2 mV. Tape, 200 mV. **Hum and Noise:** Phono, —60 dB. Tape, —70 dB. **FM SECTION: Sensitivity:** 2 μV*. **Selectivity:** 60 dB*. **Image Rejection:** 50 dB*. **Capture Ratio:** 2 dB. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 5" H x 20" W x 14" D.
*Rated IHF (Institute of High Fidelity) Standards.
†SQ is a registered trademark of CBS, Inc.

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

One of the world's finest stereo receivers



60 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

Heathkit AR-1500A Stereo FM-AM Receiver gives you top performance for your audio dollar

The AR-1500A delivers the kind of clean, low-distortion power and excellent AM and FM performance others only talk about. Compare our specifications with any other receiver — kit or assembled: 60 watts, minimum RMS, per channel into 8 ohms with less than 0.25% total harmonic distortion from 20-20,000 Hz. Intermodulation distortion is an infinitesimal 0.1% at full power or at one watt. Frequency response extends from 9 Hz to 80,000 Hz, +0, −1 dB. Remember, these are guaranteed *minimum* specifications!

A factory-assembled FET front-end provides high sensitivity and excellent resistance to overload. IHF sensitivity is just 1.8 μV so you hear more stations and less noise. And fixed LC IF filters help keep stations separate. A phase-locked multiplex demodulator provides over 40 dB of midband FM stereo separation. Signal-strength and center-channel meters make tuning easy and accurate. A front panel control lets you set the FM muting threshold to suit reception conditions in your area.

Pushbuttons instantly select tape, tape monitor, auxiliary, phono, AM, FM stereo stations only, or FM with automatic stereo/mono switching. Pushbuttons also control main and remote speakers. For private listening, there are two front-panel stereo headphone jacks. Has multipath scope outputs, switchable loudness compensation, a tone flat button, an FM stereo blend button, and individually adjustable level controls for each channel of every input. Preamp outputs and power amp inputs let you add other audio accessories.

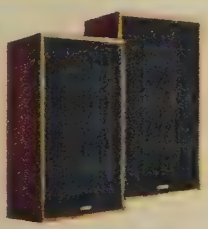
Beautifully styled too. A blackout dial accents the massive, diecast front panel. And you can custom mount the receiver or order the optional walnut veneer case. Either way, it's one beautiful receiver at a beautiful, build-it-yourself price. Less case.

Kit AR-1500A, Shpg. wt. 49 lbs. **429.95**

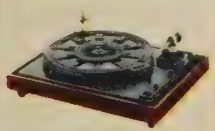
Walnut veneer case.

ARA-1500-1, Shpg. wt. 7 lbs. **27.95**

AR-1500A SPECIFICATIONS: AMPLIFIER — Frequency Response (1 watt level): −1 dB, 9 Hz to 80 kHz; −3 dB, from less than 5 Hz to 120 kHz. **Intermodulation Distortion:** Less than 0.1% at full power; less than 0.1% at 1 watt. **Damping Factor:** Greater than 60. **Input Sensitivity:** Phono, 1.8 millivolts; Tape, Aux., Monitors: 140 millivolts. **Hum & Noise:** Phono (10 millivolt reference), −63 dB. Tape and Aux (0.25 volt reference), 75 db. — **FM (Monophonic) — Frequency Response:** ±1 dB, 20 to 15,000 Hz. **Antenna:** 75 or 300-ohm. **Sensitivity:** 1.8 μV.* **Selectivity:** 90 dB.* **Image Rejection:** 100 dB.* **IF Rejection:** 100 dB.* **Capture Ratio:** 1.5 dB.* **AM Suppression:** 50 dB.* **Harmonic Distortion:** 0.5% or less.* **Intermodulation Distortion:** 0.1% or less.* **Hum & Noise:** 60 dB.* **Spurious Rejection:** 100 dB.* — **FM (Stereophonic) — Channel Separation:** 40 dB or greater at midfrequencies; 35 dB at 50 Hz; 25 dB at 10 kHz; 20 dB at 15 kHz. **Harmonic Distortion:** 0.5% at 1000 Hz with 100% modulation. **19 kHz and 38 kHz Suppression:** 55 dB or greater. **SCA Suppression:** 55 dB. — **AM — Sensitivity:** 50 μV with external input; 300 μV per meter with radiated input. **AM Antenna:** Built-in rod type; connections for external antenna and ground. **Image Rejection:** 70 dB at 600 kHz; 50 dB at 1400 kHz. **IF Rejection:** 70 dB at 1000 kHz. **GENERAL — Accessory AC Outlets:** Two. One switched and one unswitched (240 watts). **Power Requirement:** 120 or 240 volts, 60/50 Hz AC. 40 watts idling (zero output) and 356 watts at full output. **Dimensions:** Overall — 18½″ W x 5⅛″ H x 13⅞″ D. ***Rated IHF (Institute of High Fidelity) Standards.**



Budget Pleaser



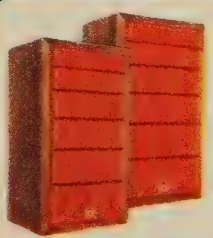
- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-1342 Speakers***
- ***B•I•C 940 Automatic Turntable with base and your choice of Shure M91ED or Empire 2000E/III Cartridge***

ARS-122, Shpg. wt. 165 lbs., mailable **639.95**

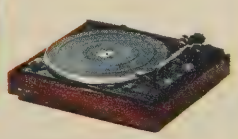
If purchased separately, up to $834.65

System Price $639.95 SAVE UP TO $194.70

Please Specify Cartridge When Ordering



Performance Plus



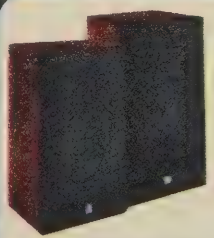
- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-1352 Speakers***
- ***Dual 510 Belt-Drive Turntable with Base and your choice of Shure M91ED or Empire 2000E/III Cartridge***

ARS-123, Shpg. wt. 215 lbs., mailable **824.36**

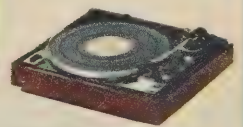
If purchased separately, up to $954.65

System Price $824.36 SAVE UP TO $130.29

Please Specify Cartridge When Ordering



Reference Standard



- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-1373 Speakers***
- ***Dual 1249 Automatic Turntable with Base and Choice of Shure M91ED or Empire 2000E/III Cartridge***

ARS-124, Shpg. wt. 242 lbs., UPS **976.36**

If purchased separately, up to $1114.65

System Price $976.36 SAVE UP TO $138.29

Please Specify Cartridge When Ordering

Unique flip-down front panel reveals secondary controls!

1515 "Separates"—Incredible Performers



AA-1515 high-performance Stereo Amplifier

$319.95

70 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.08% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

For style, features and performance, we don't think you can buy a better stereo amplifier at anywhere near this low price! Has the low-distortion power you need to drive most any speakers to "live performance" volume levels; inputs and outputs for a totally versatile system setup. Harmonic distortion is an amazing 0.08% over the 20-20,000 Hz range for exceptionally accurate music reproduction. Background noise is totally inaudible, a full 65 dB down on phono inputs, 80 dB down on all other inputs, so your music comes through clean, crisp and clear. And the AA-1515's excellent dynamic range provides ultra-realistic definition on even the most complex musical passages. Has dual output meters calibrated in both watts and decibels over a 40 dB range for an accurate visual indication of amplifier output. The meters respond to peaks as short as a record click, making them useful as overload indicators. High and low filters help you get the best sound from old or worn records. There are complete tape outputs for monitoring and dubbing, preamp out and main-amp in jacks for audio accessories. The primary controls — on-off, stereo-mono switch, volume and mode selector—are located right up front; large, easy-to-use and positive. The secondary controls are located behind a hinged front panel. Has bass and treble tone controls, balance, tone flat and loudness switches. There are outputs for two sets of speakers, and a front panel stereo headphone jack. Lighted output meters and program legends show through the smoke-tint front "window". Handsome cabinet with brushed aluminum front panel, solid walnut side panels. Easy kit assembly.

Kit AA-1515, Shpg. wt. 40 lbs. **319.95**

AA-1515 SPECIFICATIONS: **Frequency Response:** —1 dB, 8 Hz to 45 kHz; —3 dB, 4 Hz to 80 kHz. **IM Distortion:** less than 0.08% from 0.25 to 70 watts. **Damping Factor:** greater than 60. **Input Sensitivity:** Phono, 2 mV. Aux., Tuner, Tape, Tape Mon., Tape Dub., 150 mV. **Input Overload:** Phono, greater than 100 mV. All other inputs: greater than 10 volts. **Hum and Noise:** Phono, 65 dB. Tape, Tuner and Aux., 80 dB. **Power Requirement:** 120 or 240 volts; 60/50 Hz. **Dimensions:** 17½" W x 6⅛" H x 14¼" D. **Net Weight:** 27 lbs.

AJ-1515 deluxe AM/FM Stereo Tuner

$399.95

The tuner section from our AR-1515 Stereo Receiver featuring digital frequency readout and top performance — one of the finest tuners you can buy

The AJ-1515 is a top performing stereo tuner designed for use in the finest component systems. Its digital frequency readout displays AM and FM broadcast frequencies far more accurately than tuners with conventional dials; its signal-strength and center-channel tuning meters help you "zero in" on stations for the finest reception. Has 1.8 μV sensitivity with a steep quieting slope to bring in even weak signals; outstanding selectivity and capture ratio characteristics that make it ideal for crowded FM signal areas. You can build in the optional Dolby FM module to get the reduced noise and greater dynamic range of Dolbyized FM broadcasts now in many areas, too. Even the AM section features a shielded loop antenna and a 9-pole L-C filter for "hi-fi" quality AM without alignment problems. Has stereo-mono switch, a blend switch for clean reception of weak stations, switchable muting for quiet between-station tuning, controls to match the AJ-1515's output level to the other components in your stereo system. Handsome functional styling with main controls right up front, secondary controls hidden behind a convenient fold-down front panel. The stereo light, tuning meters and program indicators show through the smoke-tint front "window". Case with brushed aluminum front panel, solid walnut side panels. Easy kit assembly, too.

Kit AJ-1515, Shpg. wt. 26 lbs. **399.95**

Kit AD-1504, Optional Dolby FM Module. 2 lbs. **49.95**

AJ-1515 SPECIFICATIONS: **Frequency Response:** ±1 dB, 20-15,000 Hz. **Antenna:** 300 ohm balanced, 75 ohm unbalanced. **Sensitivity:** 1.8 μV. **Selectivity:** Alternate Channel. 100 dB*. **Image Rejection:** 90 dB*. **IF Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 65 dB*. **Harmonic Distortion:** 0.3%. **Intermodulation Distortion:** 0.1%. **Spurious Rejection:** 90 dB*. **Signal-to-Noise Ratio:** 70 dB*. **Stereo Channel Separation:** 40 dB at 1000 Hz. 35 dB at 100 Hz. 25 dB at 10 kHz. 20 dB at 15 kHz. **Stereo Harmonic Distortion:** 0.35%. **19 kHz and 38 kHz Suppression:** 60 dB. **SCA Suppression:** 60 dB. **Mute Threshold:** 0-5 μV (variable). **AM Sensitivity:** 5 μV. **Selectivity:** 20 dB. **Image Rejection:** 70 dB at 600 kHz, 50 dB at 1400 kHz. **IF Rejection:** 40 dB at 600 kHz, 60 dB at 1400 kHz. **Harmonic Distortion:** 3%. **Power Requirement:** 120 or 240 volts, 60/50 Hz. 30 watts. **Dimensions:** 17½" W x 6⅛" H x 14¼" D. **Net Weight:** 27 lbs.

Rated IHF (Institute of High Fidelity) Standards. *Dolby is a trademark of Dolby Labs.



35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

AA-2015 deluxe 4-Channel Amplifier

The same distinctive styling and features of the AA-1515 above, offered in a discrete 4-channel amplifier version for spacious quadraphonic sound. Has four lighted output meters; complete 4-channel volume and balance controls; heavy-duty heat sinks and power supply for continuous high power operation. 2 and 4-channel headphone jacks, front and rear channel speaker on-off switches. Plays all discrete 4-channel program material, accepts optional AD-1507 CD-4 discrete disc decoder and AM-1503 SQ decoder.

Kit AA-2015, Shpg. wt. 40 lbs. **419.95**

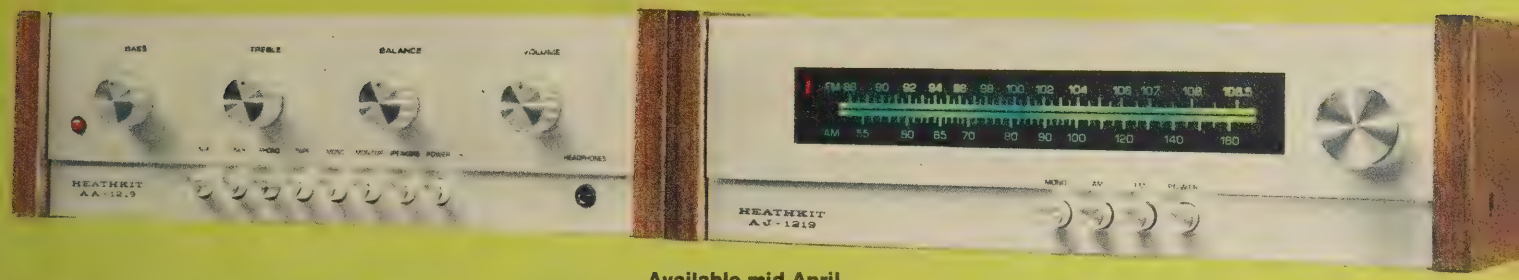
Kit AD-1507, Optional CD-4 Module. Shpg. wt. 2 lbs. **89.95**

Kit AM-1503, Optional SQ Module. Shpg. wt. 1 lb. **59.95**

AA-2015 SPECIFICATIONS: **Frequency Response:** (at 1 watt): 0 dB to —1 dB, 7 Hz to 40 kHz. **Intermodulation Distortion:** Less than 0.2% from 250 mW to 35 watts. **Damping Factor:** greater than 50. **Input Sensitivity:** Phono, 2 mV. High level, 200 mV. **Input Overload:** phono, 95 mV. High level, 5 volts. **Hum and Noise (input shorted):** Phono, —65 dB. High level, —75 dB. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 18" W x 6¼" H x 14¾" D. **Net Weight:** 31 lbs.

SQ is a Trademark of CBS, Inc. CD-4 is a Trademark of Japan Victor Company.

NEW 1219 Series "Separates"— Build yourself great sound at low cost!



Available mid April

AA-1219 Stereo Amplifier

$114.95

Top performance and a sensational low price make the AA-1219, a smart stereo buy — use it as the "heart" of a truly pleasing "budget" music system

Offers the same excellent performance as the amplifier section of the AR-1214 stereo receiver with distinctive new styling that's sure to be a hit with music lovers on a budget! And the AA-1219 has a host of "top of the line" features for operating convenience and versatility. Input level controls match the amplifier to your phono cartridge's output; tape monitor lets you listen as you record (with 3-head decks), positive pushbutton input selection, front panel stereo headphone jack, bass and treble controls, and much more. The kit building is fun and easy, too, with most parts mounted on two printed circuit boards and a wiring harness which eliminates most point-to-point connections. Stacks nicely with the AJ-1219 stereo tuner at right — together they're a top-performing, low-priced stereo pair that will provide years of fine music enjoyment. Case with stained walnut-veneer end panels.

Kit AA-1219, Shpg. wt. 15 lbs. **114.95**

15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

AA-1219 SPECIFICATIONS: **Frequency Response:** ±1 dB, 7 Hz to 100 kHz. **IM Distortion:** less than 0.5% at full power; less than 0.2% at 1 watt. **Hum and Noise:** —65 db. **Power:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅞" H x 12¾" W x 12" D.

AJ-1219 AM/FM Stereo Tuner

$114.95

Delivers crisp, clear AM and FM reception even on distant stations — offers excellent FM stereo separation with minimum distortion

A high-quality AM/FM stereo tuner at an incredibly low price. The new AJ-1219 has everything you'd expect to find in a tuner costing far more. And it's the perfect "system mate" for the AA-1219 Stereo Amplifier at left.

The pre-assembled and aligned FM front end provides 2 μV sensitivity with extremely low cross modulation and virtually no overload, even on strong signals. Stations come in clean and clear all over the dial. The FM IF uses two IC's and ceramic filters for over 60 dB selectivity for excellent reception with no interference or "blacking out" of weak signals. A phase-lock-loop multiplex circuit provides excellent stereo separation with minimum distortion. Pushbutton band selection, flywheel tuning, wide slide-rule dial for convenient station selection, stereo indicator light. Inputs for 75 or 300-ohm FM antenna, built-in rod AM antenna. Handsome metal case with stained walnut-veneer end panels.

If your budget is limited, but you still want outstanding performance, the AJ-1219 is the stereo tuner for you.

Kit AJ-1219, Shpg. wt. 12 lbs. **114.95**

AJ-1219 SPECIFICATIONS: **FM Sensitivity:** 2 μV. **Selectivity:** 60 dB. **Capture Ratio:** 2 dB. **AM Suppression:** 50 dB. **Stereo Channel Separation:** 40 dB typ., 35 dB min. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅝" H x 13" W x 11" D.

AJ-1510A Digital FM Stereo Tuner

$519.95

- ***Less than 1.8 μV sensitivity***
- ***Over 95 dB selectivity***

Incorporates the most precise and accurate tuning system available today — digital readout and digital frequency synthesis — for an incredible 0.005% tuning accuracy.

Features convenient three-way tuning — enter a station's frequency through the front panel keyboard; use the Auto-Sweep to count down from the top of the FM band and stop automatically at each listenable station, or program it to stop only at stereo stations, or use the A, B and C buttons to select any of three stations programmed with computer-type punch cards. We even supply extra cards so you'll have one for each of your favorite stations.

Has multipath outputs for DC coupled scopes (like the AD-1013), adjustable AGC and squelch, much more. The front panel meter indicates the relative signal strength of each station received, and is used as a convenient test meter during kit assembly and checkout. Build and operate the AJ-1510A tuner, we think you'll agree that it's truly one of the world's finest tuners. With metal cabinet, order case below. 6" H x 16⅜" W x 14¾" D.

Kit AJ-1510A, Shpg. wt. 25 lbs. **519.95**



Shown in optional case

Pecan Veneer Case.
AJA-1510-1, Shpg. wt. 8 lbs. **28.95**

AJ-1510 SPECIFICATIONS: **MONOPHONIC: Tuning:** Digitally synthesized. **Antenna:** 75 or 300 ohm. **Sensitivity:** Less than 1.8 μV. **Selectivity (alternate channel):** Greater than 95 dB. **Capture ratio:** Less than 1.5 dB. **Harmonic distortion:** Less than 0.3%. **IF rejection:** Greater than 95 dB. **Spurious rejection:** Greater than 90 dB. **STEREOPHONIC — Channel separation:** 1,000 Hz, 40 dB; 80 Hz, 25 dB; 10 kHz, 25 dB; 15 kHz, 20 dB. **Harmonic distortion:** 0.35%. **AUDIO OUTPUT — Audio output level: (fixed):** 1.2 V rms nominal (with 100% mod.). **GENERAL — Power Requirement:** 120/240 VAC, 60/50 Hz, 50 W.

AA-18 Low-cost Solid-State Mono Amplifier



3.25 WATTS, MINIMUM RMS, INTO 8 OHMS WITH LESS THAN 1.5% TOTAL HARMONIC DISTORTION FROM 40-20,000 HZ. Has input for phono with ceramic cartridge, mono AM or FM tuner, or tape recorder. 2⅝" H x 7 1/16" W x 5⅜" D. 120/240 VAC, 60/50 Hz.

Kit AA-18, Shpg. wt. 4 lbs. **26.95**

AA-2005A deluxe Stereo/4-Channel Amplifier



15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ. Features built-in matrix decoder optimized for SQ; inputs for tuner, discrete 4-channel tape and aux. and outputs for a discrete 4-channel tape recorder.

Kit AA-2005A, Shpg. wt. 28 lbs. **99.95**

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Heathkit Modulus™—the total hi-fi system

Here's what the experts say about Modulus...

> *...Heath's Modulus hi-fi system is good to look at, provides excellent sound and exemplifies the kind of thought-out human engineering that we admire most.*
>
> *Radio-Electronics, March, 1976*

Destined to be the standard by which other hi-fi systems are judged

> *...probably the most innovative idea to come along in years...The listening panel gave the...sound quality the highest of ratings, ranking this unit with the best in FM tuners and preamplifiers.*
>
> *Hi-Fi Stereo Buyer's Guide, March/April, 1976*



AA-1506 Stereo Amplifier

The AN-2016 Digital Tuner/Preamplifier is the "heart" of the Modulus system. Its sophisticated circuitry and exceptional versatility put you in complete command of your musical environment. And the AN-2016's matching amplifiers and optional plug-in modules let you "custom design" a system that's right for you. You can easily change or update your system to meet your changing needs. Add Dolby FM, a more powerful amplifier, convert to 4-channel, add SQ or CD-4 "build-in" modules — all at minimum cost and *without* obsoleting the AN-2016! Truly, Modulus is the world's most obsolescence-proof audio system! And its superb sound quality allows it to be the heart of even the world's finest stereo and quadraphonic music systems.

The tuner section of the AN-2016 is one of the most technologically advanced on the market. Four ½" tall LED digits display the broadcast frequency more accurately than a conventional tuning dial. TWO meters — signal-strength for fine tuning on both AM and FM, and center channel to indicate the point of lowest distortion on FM — give you outstanding tuning precision. And there are 'scope outputs so you can align your antenna for the lowest multipath distortion. Fully adjustable FM muting can be switched on or off from the front panel, and a phase-locked-loop stereo multiplex circuit assures wide stereo separation of 40 dB at 1000 Hz. Even the AM section is one of the world's best — with dual-gate MOSFET's, a 9-pole LC filter and a static-shielded loop antenna (a Heath exclusive which provides exceptional freedom from noise and improved dynamic range) for AM reception that's real "hi-fi" quality.

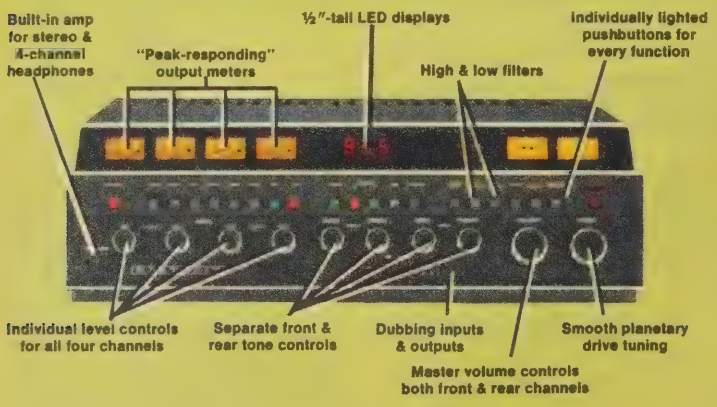
The preamplifier inputs have overload characteristics and freedom from distortion that allow superb sound reproduction from any program source. On high-level inputs, the AN-2016 reaches full output with a signal of 170 mV, yet it doesn't overload until 5 volts. The phono amplifier can be driven to full output with as little as 2 mV, but does not overload until the input reaches 60 mV! This gives you the "headroom" you need to use virtually ANY tape deck or phono cartridge to its fullest capabilities. And total harmonic distortion is a mere 0.05% throughout the entire 20 Hz to 20,000 Hz frequency range, so low you'll NEVER hear it!

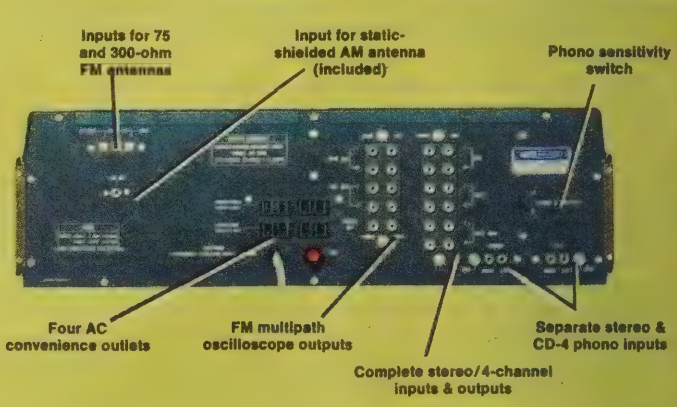
Each channel's peak-responding meter has a full 40 dB dynamic range to follow the softest and loudest musical passages faithfully — quickly detects distortion-causing clipping or overload. Handsome styling features diecast front panel and walnut-grained metal side panels.

We think Modulus represents an advance in high-fidelity concept and design that provides genuine progress in benefits, features, and styling. Its expansion capabilities make it the only hi-fi system you'll probably ever need to own; and its superb specifications and music-playing abilities make it the only hi-fi system you'll probably ever want to own. Order the AN-2016 Tuner/Preamp below, optional modules and amplifiers from next page.

It is one of the most highly acclaimed audio components in the world. Order yours today — you'll be enjoying good listening for many years to come.

Kit AN-2016, Shpg. wt. 38 lbs. **619.95**





AN-2016 SPECIFICATIONS: PREAMPLIFIER — **Frequency Response:** –0.5 dB at 10 Hz and 30 kHz. **Total Harmonic Distortion:** less than 0.05% at 1.5 V into 20K ohms. **IM Distortion:** less than 0.05%. **Hum & Noise (unweighted):** phono, –75 dB ref. to 10 mV; high-level, –80 dB ref. to 0.25V. **Bass Control:** ±15 dB at 20 Hz nominal. **Treble Control:** ±12 dB at 20 kHz nominal. **Hi Filter:** –3 dB at 7 kHz ±1 kHz, 12 dB/octave. **Lo Filter:** –3 dB at 30 Hz ±2 Hz, 12 dB/octave. **Input Sensitivity** (for 1.5 V output): phono, 2/6 mV (switch selected). **Phono Equalization:** ±0.5 dB of RIAA standard from 20-20,000 Hz. **Output Voltage:** 1.5 RMS. **FM TUNER** — (Monophonic — **Sensitivity:** 1.7 μV (IHF); 3.5 μV for 50 dB S/N. **Signal-to-Noise Ratio:** 68 dB at 1000 μV. **Selectivity:** greater than 100 dB. **Capture Ratio:** 1.3-dB. **Spurious Rejection:** greater than 90 dB. **IF Rejection:** greater than 100 dB. **Image Rejection:** greater than 90 dB. **Total Harmonic Distortion:** 0.3%. **IM Distortion:** less than 0.1%. **AM Suppression:** 68 dB. **Antenna Inputs:** 300Ω balanced; 75Ω unbalanced. — **FM (Stereophonic)** — **Stereo Sensitivity:** 35 μV for 50 dB S/N. **Total Harmonic Distortion:** 1 kHz, 0.35%. **Stereo Separation:** 40 dB at 1 kHz; 20 dB at 15 kHz. **SCA Rejection:** 65 dB. **AM TUNER** — **Sensitivity:** 6 μV for 20 dB S+N/N. **Selectivity:** more than 60 dB at 20 kHz. **Signal-to-Noise Ratio:** more than 48 dB. **Harmonic Distortion:** less than 1.0% at 400 Hz. **Antenna:** external static-shielded loop. **GENERAL** — **Power Requirement:** 120/240 VAC, 60/50 Hz. **AC Convenience Outlets:** 2 switched, 2 unswitched (500 watts max.). **Dimensions:** approx. 6½" H x 19" W x 14½" D. †SQ is a trademark of CBS, Inc.; "Dolby" is a trademark of Dolby Labs and "CD-4" is a trademark of the Japan Victor Company.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

that changes to meet your changing needs



AN-2016 Tuner/Preamp

CD-4 Demodulator Module. Lets you play CD-4 discrete 4-channel records through the AN-2016. Includes calibration record. For use with CD-4 phono cartridge.

Kit AD-1507, Shpg. wt. 2 lbs. **89.95**

Dolby FM Module. Provides the reduced noise and increased dynamic range of Dolbyized FM. Assembles, installs in one evening.

Kit AD-1504, Shpg. wt. 2 lbs. **49.95**

SQ Decoder Module. For 4-channel SQ material. Includes full-logic with variable blend enhancement for outstanding separation from tapes, records and FM.

Kit AM-1503, Shpg. wt. 1 lb. **59.95**

Modulus Stereo System

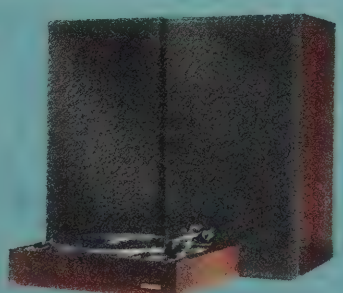
- *Heathkit AN-2016 Modulus AM/FM Control Center*
- *Heathkit AA-1506 Stereo Power Amplifier*
- *Two Heath AS-1373 Speakers*
- *Dual 1249 Turntable with base and your choice of Empire 2000E/III or Shure M91ED Stereo Cartridge*

Please specify cartridge when ordering.

Save up to $157.89

System Price

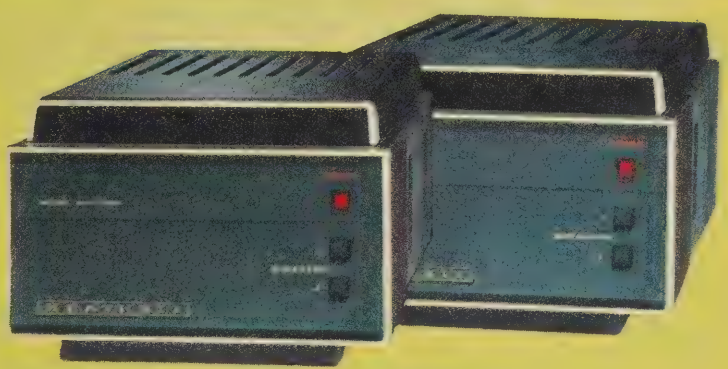
$1348.76



Specially selected to provide superb sound now, and grow with your needs later. Shpg. wt. 248 lbs.

ARS-110, UPS **1348.76**

If purchased separately, $1506.65



Feature-packed power amplifiers... exceptional performance at a budget price

35 WATTS (AA-1505) OR 60 WATTS (AA-1506) MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

A perfect match for the AN-2016 in styling and performance — and you should also consider using them with other quality preamps. Just compare the specs — intermodulation distortion is less than 0.1% at full power and drops to a mere 0.05% at 0.1 watt. Frequency response is exceptionally wide and flat — down just 0.5 dB at 8 Hz and 45,000 Hz. And, with a damping factor of over 60, you can count on the AA-1505 and 1506 to provide high definition bass response. Feature pushbutton main and remote speaker switching, lighted power button. Heath's unique plug-in speaker connectors help eliminate phasing problems. Massive side-mounted black heat sinks and walnut-grained metal side panels give the AA-1505 and AA-1506 a truly impressive appearance. Remarkably easy to build — even for first-time kitbuilders. The two printed circuit boards mount directly on the heat sinks, minimizing point-to-point wiring. A built-in test meter lets you check your work as you build.

Kit AA-1505, (Not shown.) Shpg. wt. 24 lbs. **149.95**

Kit AA-1506, (Shown above.) Shpg. wt. 25 lbs. **199.95**

OTHER AA-1506/1505 SPECIFICATIONS: **Hum and Noise:** 95 dB (referred to rated power, inputs shorted). **Separation:** 60 dB. **Input Sensitivity:** 1.5 volts for rated output. **Input Impedance:** more than 15K ohms. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 8" W x 5⅝" H x 14²³⁄₃₂" D. **Net Weight:** approx. 21 lbs.

Heathkit "Superamp" for superior sound

200 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

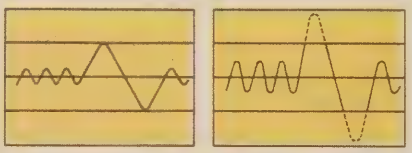


Who needs all that power?

Many hi-fi systems need a "super-amp" like the AA-1640 for good scientific and musical reasons. As sounds become louder, the ear becomes less sensitive. For one sound to seem twice as loud as another (10 dB louder), requires *10 times* as much power. A 3 dB change is just noticeable, yet it requires twice as much power.

In an average-sized room, acoustic suspension speakers may require 20 watts per channel to produce a reasonable listening level — about 90 dB. But when a momentary musical peak of 10 dB comes along, your amplifier must try to produce 200 watts per channel. Tone controls, loudness circuits, and equalizers make the same demands.

And if your amp can't deliver that much power, it clips off the peaks as shown.



unclipped clipped

Clipping causes distortion and reduces the dynamic range — the contrast between loud and soft passages. Music sounds constricted, harsh and unreal. Clipping also produces harmonics which can actually damage your tweeters.

A high power amplifier can make a big difference. Its wider dynamic range lets more of the live-performance realism come through loud and clear. Perhaps the most striking difference you'll hear is the improved definition of music...solid bass free of "boom" and distinct note for note...accurate treble clearly defined and open.

If your music system uses low-efficiency acoustic suspension speakers, only a superamp like the Heathkit AA-1640 can help them deliver their finest sound.

Heathkit AA-1640 Stereo Power Amplifier

$479.95 less meters

SAVE $19.95
When you order amplifier and meters together

"Virtually a new standard of excellence. Will probably be the amplifier to which all others are compared."
Hi-Fi Stereo Buyer's Guide, Sept./Oct., 1975

- ***Automatic circuitry assures complete speaker protection***
- ***Use with any quality preamp like the AP-1615 or AN-2016***
- ***Massive heat sinking for adequate dissipation without noisy fans***

In sheer power and exceptionally low distortion, the Heathkit AA-1640 is an extraordinary amplifier. As Julian Hirsch said in the May (1975) issue of *Stereo Review:* "The electrical performance of the Heath AA-1640 makes comment superfluous. In every respect it ranks with the finest high-power amplifiers on the market. We were constantly impressed with the conservatism of its construction and ratings."

Despite its enormous power, the AA-1640 is also an exceptionally quiet amplifier. Hum and noise are an inaudible 100 dB below full output, so you can hear music over a velvety background of silence. And you can enjoy all that quiet because there's no noisy fan. Even if it is used as a PA amplifier, the AA-1640 requires only normal ventilation and that kind of rugged, conservative design pays off in increased reliability.

A 10-second delay protects your speakers from turn-on thumps and instantly disconnects them when you turn the power off. This delay circuit also disconnects the speakers if it detects DC or extremely low-frequency AC at the outputs. Automatic thermal shutdown helps prevent damage from overheating. Finally, speaker fuses are located in the primary feedback loop — an exclusive design which maintains a high damping factor for excellent bass definition.

The optional peak-responding meters continuously monitor the output, accurately showing how much power is reaching your speakers. The backlighted scales are calibrated from −30 to +3 dB and from 0.2 to 200 watts into 8 ohms. They respond to peaks as short as a record click, making them useful as overload indicators. The meters can be installed when the amplifier is built, or later. However, if you buy the meters at the same time you buy the amplifier, you'll save $19.95.

Front-panel controls include pushbutton power on/off, left and right channel gain controls, and LED power and high temperature indicators. Plug-in speaker connectors simplify hookup.

To appreciate its real quality, the AA-1640 should be used with only the finest preamplifiers such as the Heathkit AP-1615 (facing page) or AN-2016 (see page 32).

Kit AA-1640, less meters,
Shpg. wt. 72 lbs. UPS **479.95**

Kit AAA-1640-1, Output meters only,
Shpg. wt. 3 lbs. **79.95**

Kit AAS-1640, Amp and meters together.
Shpg. wt. 83 lbs., UPS **539.95**

OTHER AA-1640 SPECIFICATIONS

Frequency Response: −1 dB, 7 Hz to 50 kHz; −3 dB, 5 Hz to 100 kHz. **Intermodulation Distortion:** less than 0.1% from .25 to 200 watts. **Damping Factor:** greater than 50. **Hum and Noise:** Less than 400 μV or 100 dB below full output. **Channel Separation:** 50 dB, min. **Input Impedance:** 50k ohms. **Input Sensitivity:** 1.5 V. **Net Weight:** 58 lbs. **Dimensions:** 19″W x 7¼″H x 18″D. **Power Requirement:** 120 VAC, 60 Hz only.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Stereo Preamp and Equalizer, Audio Control Center

[1] $139.95



[2] $129.95

[1] AP-1615 Stereo Preamp/Control Center

Perfect for use with AA-1640 or any high-quality stereo power amplifier

The Heathkit AP-1615 offers the kind of specifications and features normally found on preamps costing much more. Harmonic and IM distortion are insignificant, less than 0.05%. And extremely wide dynamic range, 100 dB for all inputs, means that even the loudest and most complex musical passages come through with minimum distortion. If you need tone controls, the optional AD-1305 (right) offers far more versatility and precise tone adjustment than ordinary bass and treble controls. A relay instantly mutes the output when power is turned on or off to prevent "thumps." A sub-sonic filter eliminates the noise from turntable rumble or record warp. Has high-frequency filter, two phono inputs, aux. and tuner inputs, tape monitor, mono switch, headphone jack and front panel dubbing inputs and outputs. Case with solid walnut end panels.

Kit AP-1615, Shpg. wt. 12 lbs. **139.95**

AP-1615 SPECIFICATIONS: **Input Sensitivity:** Phono, 2 mV. **Hi-Level** (Tuner, Tape, Aux., Tape Mon and Tape Dub): 180 mV. **Input Overload:** Phono, over 100 mV. Hi-Level, over 10 V. **Hum and Noise:** Phono, −65 dB (2 mV input); Hi-Level, −85 dB (180 mV input). **Frequency Response:** Phono, ±0.5 dB, 30 Hz to 15 kHz. Hi-Level, ±.2 dB, 20 to 20 kHz. **Rated Output:** 1.5 V at rated sensitivity. **Tape Output:** 180 mV. **Harmonic and IM Distortion:** Less than 0.05% from 20 Hz to 20 kHz at 1.5 V output. **Channel Separation:** 50 dB at 1 kHz. **Filters:** Low, −3 dB at 15 Hz, −12 dB octave/slope. High, −3 dB at 7 kHz, −12 dB octave/slope. **Power Requirement:** 120/240 VAC, 60/50 Hz, 25 watts. **Dimensions:** 4¾6" H x 17½" W x 8⅛" D.

[2] AD-1305 5-band, 2-channel Audio Equalizer

Offers more complete control than conventional bass and treble controls

The AD-1305 is an audio equalizer offering complete tone control versatility with five slide controls for each stereo channel. It is designed for use with the AP-1615 at left, or any receiver or amplifier having a preamp output and power amp input, or tape monitor. Provides precise corrections in each portion of the frequency spectrum, without overlapping. A center detent allows exact "0" dB setting bypassing each band; a tone flat switch bypasses the equalizer entirely. Compensates for room acoustics, differences in cartridges and speakers, even deficiencies in program sources. Can also be used with tape recorders to filter old or scratchy records or broadcasts before recording. Active bandpass filters with large, fully-shielded coils, ensure extremely low distortion. The AD-1305's own tape monitor lets it be used in a receiver's tape monitor circuit without losing monitor capability. Case with solid walnut end panels.

Kit AD-1305, Shpg. wt. 11 lbs. **129.95**

AD-1305 SPECIFICATIONS: **Input Impedance:** 100k ohms. **Output Impedance:** 100 ohms. **Rated Output:** 1.5 V rms. **Overload:** 5 V rms. **Signal-to-Noise Ratio:** 90 dB below 1.5 V. **Total Harmonic Distortion:** .05% from 20 Hz to 20 kHz at 1.5 V output. **IM Distortion:** .05% at 1.5 volts. **Frequency Control Range:** (separate controls for each channel), 30-125 Hz, 125-500 Hz, 500-2000 Hz, 2000 Hz to 8 kHz, 8 kHz-32 kHz. **Overall Gain (flat):** Zero dB (unity gain). **Slope of Filters:** 12 dB per octave. **AC outlets:** One switched, one unswitched. **Power Requirement:** 120/240 VAC, 60/50 Hz, 10 watts. **Dimensions:** 4¾6" H x 17½" W x 8" D.

AD-1307 versatile Audio Control Center

- ***Dual meters accurately monitor power output***
- ***Provides complete AC power and speaker switching***
- ***Ideal for use in high-power audio-systems***

The Heathkit AD-1307 is an outstanding audio control center that is useful for any component stereo system and especially recommended for systems using high-power amplifiers. It provides accurate power output monitoring for exact system balance, and complete AC switching facilities for the most sophisticated component setups. Lets you hook up one stereo amplifier to two sets of speakers, two stereo amplifiers (or a 4-channel amplifier) to four speakers. Uses the same output meters as the AA-1640. Julian Hirsch of "Stereo Review" described those meters as "by far the most useful we have ever seen on an audio amplifier...they are the ONLY ones that have any practical utility for the listener..." The meters are peak-responding with a log scale calibrated in both decibels and watts. Because they can respond to output peaks as short as a record click, they are extremely accurate and useful as overload indicators. A front panel monitor switch allows you to monitor the outputs of up to two amplifiers, you can even use a four-channel amplifier to "A-B" speaker systems. Four switched and four unswitched outlets (for a total of 1500 watts), a main power switch and a line cord capable of carrying up to 13 amps provide power switching for all the components in your system. There's a front panel headphone jack for conventional phones, and a barrier-type terminal strip on the rear panel for convenient connection of electrostatic headphones. The AD-1307 is an easy kit to build too, you can assemble it in just a couple of evenings.



$129.95

Kit AD-1307, Shpg. wt. 11 lbs. **129.95**

AD-1307 SPECIFICATIONS: **Meter Scale Calibration:** −30 dB to +3 dB, 0.2 to 200 watts. (0 dB = 200 watts into 8 ohms.) **Meter Circuit Type:** Peak Responding. **Meter Circuit Response Time:** Less than 50 μsec. **Meter Circuit Fall Time:** Greater than 0.5 sec. **Power Requirement:** 120 VAC, 50/60 Hz, 10 watts. 240 VAC, 50/60 Hz, 10 watts. **Dimensions:** 4¾6" H x 17½" W x 8½" D. **Weight:** 8 lbs. (3.6 kg.)

Get BIG SAVINGS on Heathkit Music Systems



> *While the term "best buy" is somewhat shopworn . . . the Heathkit...system would certainly qualify as a best buy in low-cost stereo . . .*
>
> *Elementary Electronics, July/August, 1975*



AM/FM Stereo Receiver with 2 Speakers

$139.96

If bought separately,

$199.90

A great low-cost system and now it's an even better buy! Inputs for ceramic phono and tape, slide controls, slide-rule dial with stereo light. Easy kit construction too. AS-1140 speakers described below.

ACS-1118, AC-1118 with speakers, 30 lbs. **139.96**

Kit AC-1118, Shpg. wt. 16 lbs. **139.95**

AM/FM/8-Track Receiver with 2 Speakers

$179.96

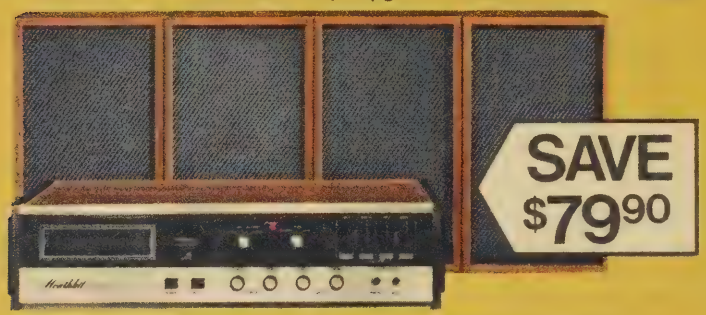
If bought separately,

$239.90

Has the same fine features as the AC-1118, but with a preassembled and aligned 8-track tape player that simply drops into the chassis. With automatic or manual program change, lighted indicators. AS-1140 speakers described below.

ACS-1120, AC-1120 with speakers, 37 lbs. . **179.96**

Kit AC-1120, Shpg. wt. 23 lbs. **179.95**



8-Track/4-Channel Player with 4 Speakers

$99.95

If bought separately,

$179.85

Plays discrete 4-channel and stereo 8-track tapes, has SQ* decoder for matrix 4-channel or enhanced stereo. Inputs for ceramic cartridge changer, high-level stereo or 4-channel source, assembled 8-track section. AS-1140 speakers described below.

ATS-1124, AT-1124 w/speakers, 51 lbs. UPS **99.95**

Kit AT-1124, Player/Amp Alone, Shpg. wt. 21 lbs. **89.95**

These specifications apply to all components on this page.

4.5 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 1.0% TOTAL HARMONIC DISTORTION FROM 50-15,000 HZ.

AMPLIFIER — Response: 30-15,000 Hz, ±3 dB. **Hum & Noise:** −60 dB. **FM Sensitivity:** 5 μV. **Stereo Separation:** 35 dB. **AM — Sensitivity:** 300 μV/m. **TAPE PLAYER — Response:** 50-10,000 Hz, +3, −5 dB. **Separation:** 30 dB at 1 kHz. **GENERAL — Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** All units are 4″ high and 15″ deep; units with 8-track players are 22″ wide, others are 17″ wide. **Cases:** walnut-grained, vinyl clad metal and plastic.



HIGH-EFFICIENCY SPEAKERS. 4½″ foam suspension speakers for use with units on this page, other compact stereo systems. 70-16,000 Hz response. Good-looking walnut-grain vinyl-clad enclosures. 12″ H x 7″ W x 6″ D. 8 ohms impedance. **Kit AS-1140,** Shpg. wt. 15 lbs. . . . . **Pair 39.95**



CERAMIC CARTRIDGE CHANGER. 3-speed changer with molded vinyl base, dust cover, 45-rpm adaptor. Ceramic cartridge with diamond stylus. 7¼″ H x 15¼″ W x 14⅛″ D. **ACP-1138,** Shpg. wt. 14 lbs. **44.95**

The TD-1006 makes music a kaleidoscope of color for your parties and get-togethers!

$89.95 ***Music becomes bursts of colored light***

The TD-1006 Color Organ translates any kind of music into pulsing, whirling starbursts of color. Just connect the TD-1006 to the speaker leads of any sound source (except AM radio). Without affecting the sound, active filters separate the audio signal into four frequency bands, each with 35 brilliantly colored lights — red for bass, blue for low-midrange, green for upper-midrange and amber for treble (140 lights total). The lights pulsate in time to the music creating spokes of color that seem to swirl. Input is 1 volt RMS min. to 22 volts RMS max. Line isolation provides source protection. Just wire the two circuit boards and install the prestrung lights in the factory-assembled cabinet. A single knob on the side controls sensitivity and turns power on or off. Just 4½″ deep — even hang it on the wall. Walnut-grained vinyl-clad case, black-out front panel. 22¾″ W x 22¾″ H x 4½″ D. For 120/240 VAC.

Kit TD-1006, Shpg. wt. 32 lbs. **89.95**



47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Heathkit Speakers Systems make music sound great!

Two-Way Bookshelf Models for low-priced Stereo Systems

$69.95 each



$84.95 each





$109.95 each

Ultra-compact "budget-priced" two-way speaker system



1¾" phenolic ring for good high-frequency response

8" Woofer with 1-lb. magnet for response to 40 Hz

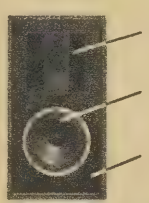
Sealed 0.87 cu.ft. enclosure with good-looking walnut-vinyl finish

An outstanding choice for low to mid-priced stereo systems, or as extension speakers in larger systems. Provides BIG audio performance from a compact enclosure. Has excellent flat response characteristics for clean, natural and well-balanced sound, 3400 Hz crossover for smooth, even frequency distribution. Has individual fuses for woofer and tweeter; tweeter level control, fully assembled walnut-grained vinyl covered enclosure, three-dimensional formed grille cloth. 19½" H x 10½" W x 8" D. 8 ohms impedance.

Kit AS-1332, Shpg. wt. 22 lbs. . . . **each 69.95**

AS-1332 SPECIFICATIONS: Frequency Range (–10 dB): 40 Hz to 20 kHz. Frequency Response: ±3 dB, 50 Hz to 18 kHz. Impedance: 8 ohms nominal. Recommended Amplifier Power: 9 watts min. to 50 watts (fused for larger amplifiers). Crossover Frequency: 3400 Hz (12 dB/octave). Dimensions: 19" H x 10½" W x 8" D (without grille). Weight: 15 lbs.

High-Efficiency "mid-priced" two-way bookshelf system



2 x 6" tweeter with exclusive Heath mounting option

8" woofer for clean bass response down to 40 Hz

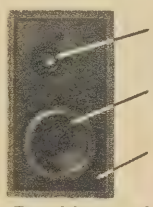
Bass reflex enclosure with walnut-finish vinyl covering

Provides a louder sound level than the AS-1332 with the same amount of amplifier power. Has front-mounted woofer and horn tweeter that can be mounted for the best high-frequency dispersion whether you place the system horizontally or vertically. The 12 dB per octave crossover minimizes distortion and insures smooth response. Has individually fused drivers, continuous tweeter level control, factory-assembled walnut-finish vinyl covered enclosure, 3-dimensional grille cloth. 22¼" H x 12" W x 10½" D. 8 ohms impedance.

Kit AS-1342, Shpg. wt. 30 lbs. . . . **each 84.95**

AS-1342 SPECIFICATIONS: Frequency Range (–10 dB): 40 Hz to 16 kHz. Frequency Response: ±3 dB, 60 Hz to 14 kHz. Impedance. 8 ohms nominal: Recommended Amplifier Power: 4 watts min. to 50 watts (fused for larger amplifiers). Crossover Frequency: 2500 Hz (12 dB/octave). Dimensions: 22¼" H x 12" W x 10½" D. Weight: 20 lbs.

Our best performing two-way bookshelf speaker system



1¾" phenolic-ring tweeter for high frequency response with superior dispersion

Special design 10" woofer with enhanced midrange response

Sealed 1.45 cu.ft. enclosure with walnut-veneer cabinet and deluxe foam grille

Provides a wider frequency range and better response than our other two-way bookshelf systems. The 10" woofer gives you solid bass and has enhanced midrange response so the AS-1352 sounds as good as many three-way systems; the phenolic-ring tweeter is designed for superior high-frequency dispersion. Has a flat/–3 dB high frequency switch, separately fused woofer and tweeter, 2800 Hz crossover. Factory-assembled walnut-veneer cabinet with acoustical foam grille. 24" H x 13½" W x 11" D. 8 ohms impedance.

Kit AS-1352, 49 lbs. UPS . . . . . **each 109.95**

AS-1352 SPECIFICATIONS: Frequency Range (–10 dB): 30 Hz to 20 kHz. Frequency Response: –3 dB, 45 Hz to 18 kHz. Impedance: 8 ohms nominal. Recommended Amplifier Power: 6 watts min. to 100 watts (fused for larger amplifiers). Crossover Frequency: 2800 Hz (12 dB/octave). Dimensions: 24" H x 13½" W x 11" D. Weight: 38 lbs.

Our lowest-priced bookshelf speaker system

$29.95 each

- *True acoustic-suspension design for clean, well-balanced sound — ideal for compact stereo systems*

An excellent performer at a low kit-form price! Has a high-compliance 4½" speaker for usable frequency response from 70 Hz to 16 kHz, ultra-compact assembled walnut-veneer enclosure. For use with amplifiers providing 2.5 to 20 watts. 8 ohms. Measures only 12" H x 7" W x 6" D.

Kit AS-106, Shpg. wt. 9 lbs. . . . . **each 29.95**



SAVE AN EXTRA 5%

when you order a complete home hi-fi system from Heath

Here's another way Heath helps you get more good sound for your money. Simply select 1) a receiver and a pair of speakers or 2) an amplifier, a pair of speakers and program source (tuner, turntable or tape deck). Add the costs of the individual components, then deduct 5%. The same 5% discount applies to any audio accessories you order with your system—remote or rear-channel speakers, cabinets, tape deck, turntable, audio scope or headphones. NO LIMIT—order as many accessories as you like and still get the 5% discount! Discount does not apply to featured systems, or SALE-PRICED systems on page 36.

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

High-Performance Heathkit Speaker Systems



Versatile two-way Column Speaker System

$139.95 each *Features FLAT ENERGY RESPONSE for superb sound*

Has the placement flexibility you NEED for virtually ANY listening area!



In narrow rooms, sound patterns can be directed out, or reflected off side walls

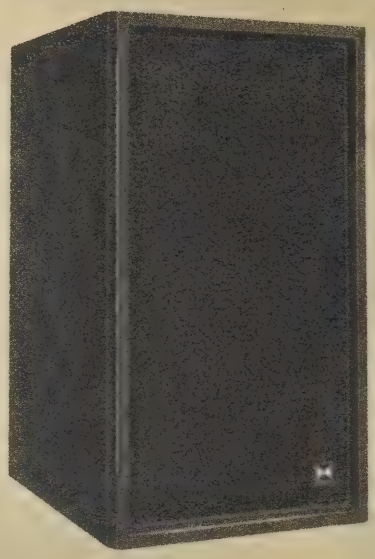


In wider rooms, sound patterns can be "aimed" toward each other, or into central listening area

One of the finest column speakers you can buy, at a surprisingly low kit form price! Has two 1″ dome tweeters and two 6½″ full-range drivers mounted in separate woofer-tweeter arrays on adjacent sides of the cabinet to maintain well-balanced sound. The AS-1344 is designed for Flat Energy Response: a combination of on-axis and off-axis response that produces a completely realistic sound throughout your listening room. The woofers are located well above the floor, so bass response is solid and well-defined. There is no mid-bass boom or resonance, so mid-frequencies come through loud and clear. The tweeters deliver a full 10 to 20 dB more off-axis response than conventional tweeters for bright, clean highs — and their amazing 270° dispersion pattern maintains a well-balanced stereo image regardless of speaker placement. The overall balance and wide dynamic range of the AS-1344 make it one of the best speakers you'll hear in this price category. Has a nominal 4 ohms impedance, so most amplifiers will deliver up to TWICE their rated 8 ohm power. Separately fused woofers and tweeters, flat/-3 dB level control. Light walnut-vinyl finish on all four sides, simulated black slate top and acoustically transparent foam grille.

Kit AS-1344, Shpg. wt. 53 lbs. UPS .....**each 139.95**

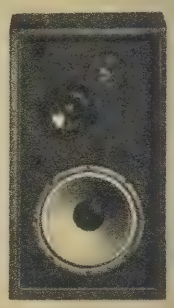
AS-1344 SPECIFICATIONS: Frequency Range (−10 dB): 35 Hz to 22 kHz. Frequency Response: ±3 dB, 55 Hz to 20 kHz. Impedance: 4 ohms minimum. Recommended Amplifier Power: 6 watts min. to 100 watts (fused for larger amplifiers). Crossovers: 4000 Hz mechanical (on woofer) and 12 dB/octave electrical on tweeter. Fuses: 1½-amp Slow-Blow for woofers, 1 amp regular for tweeter. Control: 2 position tweeter level, flat and −3 dB. Dimensions: 40″ H x 11″ W x 11″ D. Weight: 45 lbs.



Our lowest-priced three-way floor/shelf speaker system

$129.95 each

Offers full-range 3-way performance at the price of many two-way systems



The AS-1363 is a full-range 3-way speaker system designed for use in moderately priced stereo systems or as rear-channel speakers in quadraphonic systems. It uses a 10″ woofer, a 4½″ midrange speaker and a 1″ dome tweeter for extremely smooth and clean overall response, with excellent high-frequency dispersion. Special attention to crossover design gives the AS-1363 outstanding overall response and dynamic range. The woofer-to-midrange crossover frequency is 750 Hz (6 dB/octave) to insure a smooth-sounding midrange; while the midrange to tweeter crossover is 4000 Hz (12 dB/octave) to prevent the excessive cone excursions that cause distortion and break-up. Two-position midrange and tweeter switches let you adjust the AS-1363's sound to suit any listening room. Each driver is individually fused for protection. Impedance is 8 ohms. The factory-assembled cabinet features a handsome pecan-veneered Mediterranean finish and hardwood trim, with a decorative gold/black patterned grille cloth. The AS-1363's excellent performance and handsome good looks make it an ideal addition to any stereo system. 24¾″ H x 14¼″ W x 11½″ D.

Kit AS-1363, Shpg. wt. 61 lbs. UPS .....**each 129.95**

AS-1363 SPECIFICATIONS: Frequency Range (−10 dB): 30 Hz to 20 kHz. Frequency Response: ±3 dB, 45 Hz to 18 kHz. Impedance: 8 ohms, 6 ohms minimum. Recommended Amplifier Power: 5 watts min. to 130 watts (fused for larger amplifiers). Crossover Frequencies: 750 Hz (6 dB/octave) and 4000 Hz (12 dB/octave). Controls: two-position switches for midrange and tweeter. Enclosure: Pecan-veneered ¾″ particle board, sealed, 1.45 cu. ft., filled with sound absorbent material. Dimensions: 24¾″ H x 14¼″ W x 11½″ D. Weight: 40 lbs.

Ultra-efficient Heathkit/JBL Speaker System



Features a massive 14″ woofer with 11½-lb. magnet structure for superb bass response, 2″ direct radiator tweeter

Delivers superb sound and top performance from virtually any amplifier, low or high power! Has smooth frequency response from 40 Hz to 20 kHz; 3-position high-frequency level control; 14″ woofer with inert, self-damping cone suspension. The damped reflex enclosure is factory assembled and finished with oak veneer and furniture grade hardwoods. 8 ohms. 14″ H x 23½″ W x 12″ D.

Kit AS-48, Shpg. wt. 57 lbs. **249.95**

Heathkit/AR combine for super sound



The famous AR-3A full-range speaker in easy-to-build kit form from Heath — a really smart speaker buy

Delivers clean, natural response with extremely low distortion from 30 Hz to 20 kHz. Has a 12″ acoustic-suspension woofer, special hemispherical dome tweeter and midrange speakers, and a precise crossover network. Individual midrange and tweeter level controls. 8 ohm impedance. Assembled oiled walnut veneer enclosure, 25″ H x 14″ W x 11¾″ D.

Kit AS-103A, 64 lbs. UPS ....**each 229.95**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Our Finest Three-Way Speaker System

$289.95 each

Designed for use with the finest stereo components — offers the bass power and dynamic range you NEED for "live performance" sound levels with any music

Our best speaker and one of the finest in the world — Heath-designed and engineered for sonic excellence at a sensational low price! Combines a massive 15″ slot-loaded woofer, two 4½″ midrange speakers and three 1″ tweeters in a precision-designed cabinet for superb sound reproduction. The AS-1348 features outstanding dynamic range from below 30 Hz to above 20 kHz. The specially designed crossovers provide an excellent balance between low, midrange and high frequencies. The woofer is mounted in the rear of the cabinet to improve low-frequency response when the AS-1348 is placed near a wall. The two midrange drivers radiate directly forward for midrange response with excellent presence and realism. The three tweeters face forward, angle right and angle left for high-frequency response with wide horizontal and vertical dispersion. While most conventional speaker systems produce maximum sound levels only at upper bass and midrange frequencies, the AS-1348 produces very high sound levels without distortion at ALL audible frequencies. Has individual fuses for woofer, midranges and tweeters, six-position attenuation controls for adjusting response characteristics to any listening area. Fully assembled, sealed acoustic-suspension enclosure with walnut and pecan veneer finish, acoustically transparent grille cloth. 38″ H x 24″ W x 15″ D. 8 ohms impedance.

Kit AS-1348, Shpg. wt. 102 lbs. UPS **289.95**

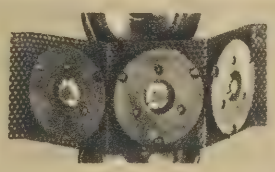
AS-1348 SPECIFICATIONS: Frequency Range (−10 dB): 22 Hz to 22 kHz. Frequency Response: ±3 dB, 28 Hz to 20 kHz. Impedance: 8 ohms nominal. Recommended amplifier power: 8 watts min. to 250 watts (fused for larger amplifiers). Crossover frequencies: 500 Hz (12 dB/octave) woofer-to-midrange and 3000 Hz (6 and 12 dB/octave) midrange-to-tweeter. Fuses: Woofer, 1½-amp Slow-Blow; midrange, ⅜-amp Slow-Blow; tweeter, 1-amp regular Blow. Dimensions: 38″ H x 24″ W x 15″ D. Weight: 100 lbs.



Available late May



15″ rear-facing woofer for outstanding bass response all the way down to 20 Hz



Three 1″ tweeters are angled to provide superior dispersion characteristics and stereo imaging



Two front-facing midrange drivers for twice the power handling at the important middle frequencies

Our best-selling three-way speaker system

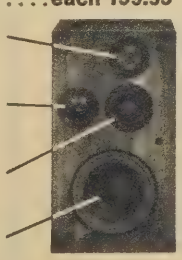
$159.95 each

Our most popular speaker because it rivals the performance of speakers costing much more — innovative design and superb sound are the reasons why!

A truly outstanding floor/shelf speaker system with specifications you simply won't find on comparably priced models and performance to match! The 10″ woofer provides solid, well-defined bass. The 4½″ midrange is isolated in its own polyester-damped subenclosure to prevent distortion caused by woofer vibrations and reflections. The 1″ dome tweeter provides excellent power handling and definition, and features horizontal dispersion of a full 120° even at 12,000 Hz. All three drivers are flush mounted, and there are no "rails" around the cabinet to limit treble dispersion and cause peaks and dips in treble response. And, for best imaging, you can position the tweeter directly above the midrange whether you position the system vertically or horizontally — a Heath exclusive! While the AS-1373 can be used with almost any amplifier, a high-power amp like the Heath AA-1640 reveals its awesome dynamic range. Has individual fusing for each driver, two high-frequency controls to match response to your listening area. Fully assembled walnut-finish veneer cabinet with deluxe, acoustically transparent foam grille. 26″ H x 14½″ W x 11⅞″ D. 8 ohms impedance.

Kit AS-1373, Shpg. wt. 62 lbs. UPS ..... **each 159.95**

AS-1373 SPECIFICATIONS: Frequency Range (−10 dB): 30 Hz to 22 kHz. Frequency Response: ±3 dB, 40 Hz to 20 kHz. Impedance: 8 ohms. Recommended amplifier power: 11 watts min. to 200 watts. (fused for larger amplifiers). Crossover frequencies: 500 Hz (6 dB/octave) and 3000 Hz (12 dB/octave). Fuses: Woofer, 1¼ amp Slow-Blow; midrange, ¾-amp Slow-Blow; tweeter, ½-amp regular. Controls: 3 kHz shelf/flat; 10 kHz rolloff/flat. Dimensions: 26″ H x 14½″ W x 11⅞″ D, without 1¼″ grille. Weight: 47 lbs.

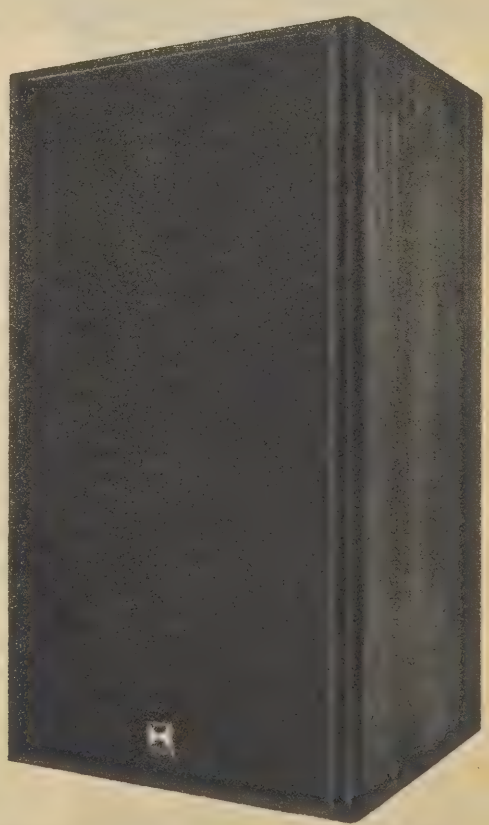


1″ wide-dispersion dome tweeter for superb definition

Easy-access controls and fuses

4½″ midrange in special subenclosure

Gutsy 10″ woofer for solid, well-defined bass



Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Order one of these Heath-recommended



With Base and Cartridge

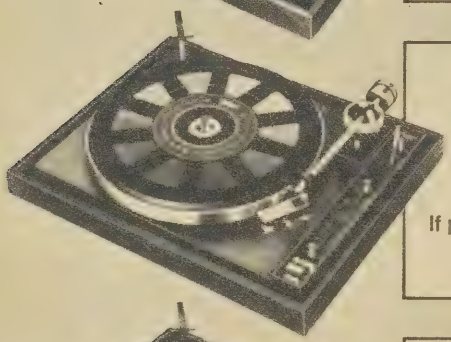
$199.95

If purchased separately, up to $286.85
Save up to $86.90

B·I·C 980 with electronic speed control

Precision belt drive and electronic speed control give you the performance and reliability of studio-quality turntables. The unique "programming panel" gives you the convenience of a changer. Permits automatic play of a single disc once or up to six times, or plays a six-record stack. Has 24-pole synchronous motor, pitch control, strobe, 33⅓ and 45 rpm operation. Includes base and your choice of cartridge: Shure M91ED or Empire 2000E/111 (specify). For premium performance, add $45 for Shure V-15 Type III or $45 for Audio-Technica AT-14Sa cartridge; see cartridge specs in chart below. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1167, Shpg. wt. 13 lbs. Assembled **199.95**



With Base and Cartridge

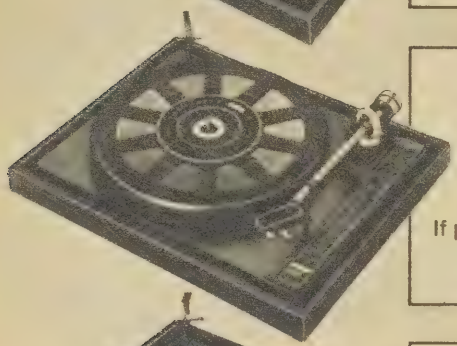
$159.95

If purchased separately, up to $246.85
Save up to $86.90

B·I·C 960 belt-drive automatic turntable

The same ultra-reliable design as the B·I·C 980 minus the electronic speed control, adjustable pitch and strobe. 33⅓ and 45 rpm. Includes base and your choice of Shure M91ED or Empire 2000E/111 cartridge (specify). 15⅞" W x 12 11/16" D x 4 15/16" above board, 1⅝" below.

ACP-1166, Shpg. wt. 12 lbs. Assembled **159.95**



With Base and Cartridge

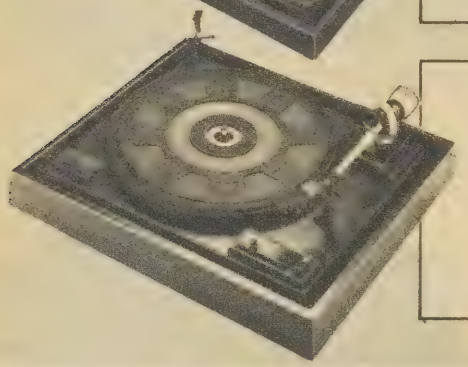
$119.95

If purchased separately, up to $206.85
Save up to $86.90

B·I·C 940 budget-priced belt-drive turntable

A true B·I·C automatic turntable—with belt drive, low speed 24-pole synchronous motor, up to six-record continuous play. Extremely low-friction bearings and an isolated counterweight allow tonearm to track even the highest quality cartridges. Has viscous-damped cueing, 12" platter, 33⅓ and 45 rpm speeds, and CD-4 capability. Includes base and your choice of Shure M91ED or Empire 2000E/111 cartridge (specify). 15⅞" W x 12 11/16" D x 4 15/16" above board, 1⅝" below.

ACP-1161, Shpg. wt. 11 lbs. Assembled **119.95**



With Base Dust Cover and Cartridge

$89.95

Value Up To $127.80

B·I·C 920 low-cost belt drive turntable

THE choice for a low-priced stereo system! Belt-drive, 24-pole motor, lightweight tubular tonearm, anti-skate and tracking force adjustments, lots more. Plays a single record up to six times, or six records in a stack. 33⅓ or 45-rpm operation. CD-4 capability. 10½" precision formed platter. Includes base, dust cover and Shure M75ECS stereo cartridge. 15¼" W x 13⅜" D x 6⅜" H with dust cover.

ACP-1211, Shpg. wt. 12 lbs. Assembled **89.95**

ACCESSORIES FOR B·I·C TURNTABLES, EXCEPT 920

ADP-1163, Solid oiled walnut base, Shpg. wt. 4 lbs. **16.95**
ADP-1164, Hinged dustcover, Shpg. wt. 4 lbs. **9.95**
ADP-1165, 45-rpm spindle, Shpg. wt. 1 lb. **3.95**

NOTE: When ordering turntable, please specify cartridge and base model numbers on order blank.

ORDER YOUR PERSONAL, ENGRAVED NAME PLATE!

$1.50 for one
($1.30 each for 2 or more)
($1.75 if purchased separately)

Separate purchase can only be made through your local Heathkit Electronic Center



What better way to show your pride in your finished kit? The handsome hand-engraved name plates feature a virtually indestructible silver-satin, brushed jeweler's finish on durable Metal Graphics™ Aluminum and self adhesive backing. You'll want one for every Heathkit product you own. Remember, your name plate order **must** accompany a regular kit order to get the lowest price.

FILL IN THIS SPECIAL NAME PLATE ORDER FORM COMPLETELY AND BRING IT IN TO YOUR LOCAL HEATHKIT ELECTRONIC CENTER. PLEASE PRINT YOUR NAME PLAINLY IN CAPITAL LETTERS, USING A MAXIMUM 14 CHARACTERS (INCLUDING SPACES) IN THE BOXES PROVIDED BELOW.

Please enter my order for ____ GDP-1225 name plates. The price is $1.50 each, $1.30 for two or more (including postage and handling to your Heathkit Electronic Center).

Name _____

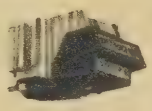
Address _____

City _____

State _____ Zip Code _____

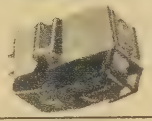
CUT OUT ENTIRE FORM ON DOTTED LINE AND ATTACH TO YOUR KIT ORDER

Stereo Cartridges



Shure V-15 Type III. Famous for its excellent tracking and smooth, uncolored sound. For tonearms capable of tracking at ¾ to 1¼ grams. See specifications below.

AD-1059, Shpg. wt. 1 lb. **85.00**
With turntable purchase **45.00**



Audio-Technica AT-14Sa. Specially shaped and polished Shibata stylus for unparalleled quadraphonic CD-4 and stereo response. Lasts twice as long as ellipticals! Specs below.

ADP-1139, Shpg. wt. 1 lb. **85.00**
With turntable purchase **35.00**

Model	Response (Hz)	Output	Separation	Elliptical Stylus	Tracking	Price Alone	With Turntable
ADP-1062, Wt. 1 lb. Shure M91ED	20-20,000	5.0 mV	25 dB	0.2 x 0.7	¾ to 1½ gr.	59.95	FREE
ADP-1147, Wt. 1 lb. Empire 2000E/111	20-20,000	4.5 mV	28 dB	0.2 x 0.7	½ to 1½ gr.	69.95	FREE
AD-1059, Wt. 1 lb. Shure V-15 Type III	10-25,000	3.5 mV	28 dB	0.2 x 0.7	¾ to 1¼ gr.	85.00	45.00
ADP-1139, Wt. 1 lb. Audio-Tech. AT-14Sa	5-45,000	2.7 mV	25 dB	Shibata	1 to 2 gr.	85.00	45.00



Sennheiser HD-424 Headphones with patented Open-Air design. Super lightweight—a mere 6.5 ounces. 15-20,000 Hz response, less than 1.0% total harmonic distortion. 2000 ohms. 10-ft. coil cord, ¼" phone plug.

AHP-1193, Shpg. wt. 2 lbs. Assembled **64.95**

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

turntable packages and save up to $86.90

Order one with a complete hi-fi system and save another 5%

Dual®

The belt-drive changer from Dual

The incredible Dual 1249 featuring precision belt-drive, 4-point gimbal-mounted tonearm with selectable tracking angles for automatic and manual play. Has illuminated strobe, variable pitch control, CD-4 compatibility. 33⅓ and 45 rpm speeds. Dynamically balanced full-size 12″ turntable platter. Includes base and choice of Shure M91ED or Empire 2000E/III cartridge (specify). Or, add $45 for either Shure V-15 Type III or Audio-Technica AT-14Sa cartridge. 4½″ H x 14¾″ W x 12⅛″ D, less base.

ACP-1148, Shpg. wt. 16 lbs. Assembled **249.95**

With Base and Cartridge

$249.95

If purchased separately, up to $336.85

Save up to $86.90



Dual 510 belt-drive semi-automatic

Single-play turntable features four-point gimbal mounted tonearm and 8-pole synchronous motor driving a 12″ dynamically-balanced cast platter by means of a precision-ground belt. A special sensor indicates when the tonearm is properly positioned manually over the lead-in grooves of 12″ or 7″ records. After record has played, tonearm lifts and motor shuts off automatically. Has two-way damped cueing, anti-skate calibrated for conical, elliptical and CD-4 styli, pitch control with lighted strobe. 33⅓ and 45-rpm operation. Includes base and choice of Shure M91ED or Empire 2000E/III cartridge. 4½″ H x 14¾″ W x 12⅛″ D.

ACP-1213, Shpg. wt. 13 lbs. Assembled **189.95**

With Base and Cartridge

$189.95

If purchased separately, $276.85

Save $86.90



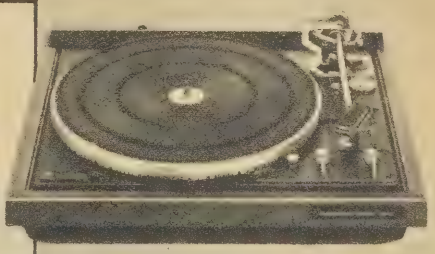
Dual CS-721 direct-drive automatic

One of the finest turntables available. Fully automatic single-play, electronic direct-drive motor, advanced design four-point twin gimbal tonearm mounting. Adjustable tonearm height lets you use almost any cartridge without spacers — provides the correct tracking angle without adding to effective tonearm mass and lets you interchange cartridges easily. Has two anti-resonance filters in the counterbalance housing to prevent acoustical feedback, lighted strobe, adjustable speed; cueing, electronic pitch control, continuous repeat play, anti-skate calibrated for conical, elliptical and CD-4 styli. 33⅓ and 45-rpm operation. CD-4 capability. With Shure V-15 Type III cartridge, base and dust cover.

ACP-1217, Shpg. wt. 25 lbs. Assembled **369.95**

With Base, Dust Cover and Shure V15 Type III Cartridge

$369.95

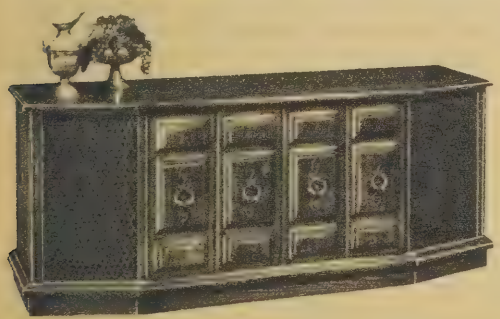


Accessories for Dual 1249 and 510 Turntables

ADP-1220, Simulated walnut base, Shpg. wt. 4 lbs. **16.95**
ADA-49-4, Dustcover, Shpg. wt. 5 lbs. **15.95**
ADA-39-2, 45-rpm spindle for 1249 only. Shpg. wt. 1 lb. **9.95**

NOTE: When ordering turntable, please specify cartridge and base model numbers on order blank.

Luxurious Mediterranean equipment cabinet



Fully Assembled

$289.95

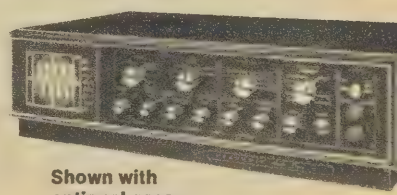
- ***Real Hickory Veneers***
- ***Solid Oak Trim for a rich, luxurious appearance***
- ***Handsome Pecan Finish adds beauty to any decor***

Ducted port speaker enclosures with precut 12″ openings. Overall cabinet: 26⅞″ H x 66″ W x 19¼″ D. Shelf compartment: 35⅞″ W x 17½″ D overall, shelf 15″ D. Adjustable shelf height: 5½″, 6½″, 7½″, 8½″. Lower compartment: 35⅞″ W x 17½″ D x 12¼″ H min. (shelf at 8½″). Speaker cabinet volume: 2.3 cu. ft. Changer Base: 5½″ H x 18″ W x 14″ D. Shpg. wt. 166 lbs.

AE-101, Motor Freight **289.95**
AEA-101-3, slide-shelf accessory, 8 lbs. **29.95**

Stereo/4-Channel Audio-Scope

Measure phasing and channel separation on stereo and 4-channel systems; even indicates signal-strength, FM center tune, FM multipath distortion on tuners and receivers with multipath scope outputs. Has built-in audio oscillator for frequency response checks. With black metal cabinet, optional case below.



Shown with optional case

Kit AD-1013, Shpg. wt. 20 lbs. **259.95**
Walnut veneer case. ARA-1500-1, Shpg. wt. 7 lbs. **27.95**

AD-1013 SPECIFICATIONS FRONT PANEL — Scope Input: Vertical Sensitivity: 25 millivolts P-P/cm. Input Impedance: 100 kΩ. Frequency Response: 5 Hz to 200 kHz ±3 dB. Oscillator Output: 20 Hz to 20 kHz. Voltage Level: 2 mV to 3 volts (rms) (variable). Output Impedance (front panel jack): Approximately 600Ω. Calibrator Voltage: 1.0 volt P-P ±5%. Total Harmonic Distortion: 1% or less. REAR PANEL — Oscillator Output Impedance: 6000Ω. Multipath Input (Scope Horizontal and Scope Vertical) Sensitivity: 25 mV P-P/cm. Input Impedance: 100 kΩ. Left Front, Right Front, Left Back and Right Back Inputs: Sensitivity: 25 mV P-P/cm. Input Impedance: 100 kΩ. Frequency Response: 5 Hz to 200 kHz, ±3 dB. 4-Channel Input: Sensitivity. 1 volt P-P/cm. Input Impedance: 5000Ω. GENERAL — Triggered Sweep Generator: Range: 10 Hz to 100 kHz. Power Requirement: 120 or 240 volts AC, 60/50 Hz, 15 watts. Dimensions (overall): 5⅛″ H x 18½″ W x 13½″ D.

Build your way to better recording



Heathkit AD-1530 deluxe Cassette Deck with Dolby®

- ***Famous Dolby Noise Reduction System helps you make recordings that sound better than pre-recorded!***
- ***Fully assembled tape transport makes kitbuilding easy***
- ***Hooks up easily to any stereo system***



$289.95

The Heathkit AD-1530, in easy-to-assemble kit form, combines a performance-proven domestic tape transport with the famous Dolby noise reduction system and precision design Heath electronics.

The famous tape transport comes preassembled, ready to wire into the kit. Has play, stop, fast-forward/rewind, and eject controls; safety interlock; automatic shutoff at end of tape in both "play" and "record" modes. Also features convenient piano-key control of play-record-stop; lever control of fast-forward, rewind, eject, stereo/mono input, of play-record-stop; lever control of fast-Dolby on-off, selector for both iron oxide and chromium dioxide tapes.

Other features include individual bias adjust controls for regular and CrO_2 tape; large three-digit resettable counter; lighted VU meters; pause control; input selector switch for either microphone or high-level source input (any low impedance microphone with standard ¼" phone plug can be used); stained walnut-veneer base.

PC board amplifier and Dolby circuits simplify kit construction and servicing. Built-in test circuitry and free test cassette aid in checkout and adjustment. Blank 90 minute cassette included.

Kit AD-1530, Shpg. wt. 20 lbs. **289.95**

ADA-1530-1, Dust cover, Shpg. wt. 2 lbs., **6.95**

AD-1530 SPECIFICATIONS: **Response:** Regular (iron oxide) tape; ±3 dB from 40 Hz to 12 kHz typical. CrO_2 (chromium dioxide) tape; ±3 dB from 40 Hz to 14 kHz typical. **Distortion:** Tape dependent; electronics less than 0.2%. **Hum and Noise:** Dolby Switch OFF, −48 dB. Dolby Switch ON provides up to 10 dB additional noise reduction. **Wow and Flutter:** Less than 0.25% rms. **Inputs: Microphone:** Lo-Z, 0.2 mV to 10 mV. **Auxiliary:** Hi-Z, 50 mV to 10V. **Fast Forward/Rewind Time:** Approximately 45 sec. for C-60 cassette. **Dimensions:** 5½" H x 9½" D x 14" W. **Power Requirement:** 120 volts, 60 Hz, 15 W. Dolby is a Trademark of Dolby Labs.

Heathkit Stereo Mike Mixer Console



$144.95

Wide response (40-20,000 Hz, ±1 dB) and low distortion (0.5%) give you clean, life-like mixing for any kind of recording need!

Each of the two outputs has its own master level control and meter and they can be switched for use in stereo or mono. Has four mike plus two aux. inputs. The fourth mike input has a "pan" control to adjust its apparent location from left to right or anywhere in between. All six inputs can be individually switched to left, off, or right channel. Mixers can be paired for extra inputs and outputs.

Backlighted meters with two switch-selected ranges plus a pair of LED's with adjustable threshold (80 mV to 6.5 mV) show instantaneous peaks faster than any meter to help reduce distortion. Handsome cabinet in black with stained walnut-veneer end panels. Easy and enjoyable kit assembly too.

Kit TM-1626, Shpg. wt. 12 lbs. **144.95**

TM-1626 SPECIFICATIONS: **Frequency Response:** 40-20,000 Hz, ±1 dB. **Distortion:** 0.5% maximum. **Hum:** −80 dB at minimum volume. **Hum & Noise:** −50 dB from 20-20,000 Hz, all controls set at maximum. **Input Sensitivity for 1.0 Volt Output:** Mike (low-Z), 1 mV; Mike (high-Z), 14 mV; Aux., 150 mV. **Input Overload:** Mike −60 mV (low-Z), 900 mV (high-Z). Auxiliary, 3.0 V. Mixer Bus, 200 mV. **Input Impedance:** Mike −1100 ohms (low-Z), 170k ohms (high-Z). Auxiliary: 100k ohms. **Mixer Bus:** 3000 ohms. **Output Impedance:** 150 ohms. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts maximum. **Dimensions:** 5¾6" H x 16" W x 9⅞" D.



Questions & Answers About Tape Recording—everything from "accessories" to "weak sound." **EDP-107** **5.95**

How to Select/Use/Troubleshoot Cassette and Cartridge Recorders. EDP-195 . . . . . **4.55**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

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EDP-113 .....34.00

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The easy-to-read text covers theory, function and use of RF and audio frequency generators. Shows you how to get the best use from this important basic test instrument. The special chassis supplied lets you perform experiments quickly and easily.

Kit EF-3, Text and chassis, Shpg. wt. 3 lbs. 24.95

Kit EFS-3, EF-3 and IG-102 Signal Generator. 17 lbs. 67.95

Manuals only for EF-3. Single copy, 5.00; 10 or more, ea. 3.00.

See page 82 for a complete description of the IG-102.

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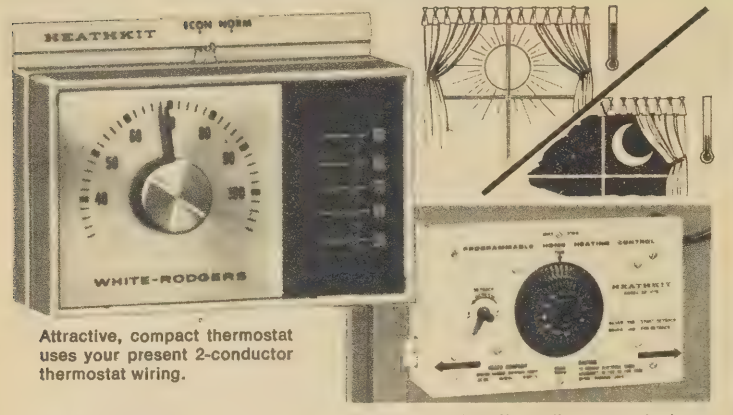
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Heath helps you enjoy your home more



Attractive, compact thermostat uses your present 2-conductor thermostat wiring.

Control unit installs easily on any single-stage gas, oil or electric furnace.

New GD-1776 Programmable Home Heating Control

$39.95

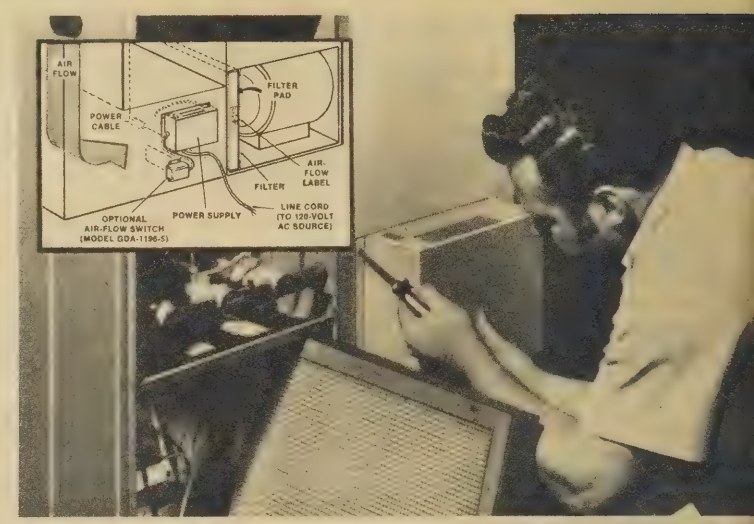
- ***Two programmable setbacks in a 24-hour period***
- ***Econ-Norm override switch for normal operation***
- ***Provides substantial fuel savings***

Here's a kit that can actually pay for itself in fuel savings — depending on the amount of setback and your geographical location, reduces fuel cost as much as 5-10%! The GD-1776 helps you conserve energy by automatically reducing room temperature during one or two preprogrammed periods. Program the GD-1776 for setbacks when you're sleeping and when you're at work or whenever you like — it's all automatic! It reduces room temperature from as little as 1°F to more than 10°F for periods of ½ hour minimum to 23½ hours maximum. Heat is returned to its normal level automatically. An ECON-NORMAL switch overrides the timer and returns your furnace to normal operation.

The GD-1776 installs quickly and easily on any type of single-stage furnace. The replacement thermostat utilizes your existing 2-conductor wire. No extra thermostat wiring is needed. Certain combination heating/cooling systems may require the aid of a professional heating/air conditioning service if the installation presents unusual circumstances. Some local codes may require "hard-wiring" of the primary (120 VAC) power source by a licensed electrician. Not intended for use with 2-stage systems.

Kit GD-1776, Shpg. wt. 5 lbs. **39.95**

GD-1776 SPECIFICATIONS: Temperature Setback Range: 1 to 10°F. Number of Setback Periods: 2. Setback Duration: ½ hour, minimum, 23½ hours, maximum. Timer Dial: 24 hours. Anticipator Current: .3A. Controls: Timing, Setback. Power Requirement: 120 volts, 50/60 Hz, 10 watts. Furnace Control Current Rating: 1A @ 24 VAC maximum. Dimensions: Thermostat: 3¼" H x 4½" W x 1⅝" D. Control Unit: 4⅞" H x 8" W x 2½" D.



Furnace electronic Air Cleaner

$189.95

Installs on standard furnaces or air conditioners directly in place of present filter—usually without cutting or altering ductwork

Removes most dust, dirt, pollen and other allergenic contaminants so your whole family can breathe fresh, clean air. Helps remove smoke and reduce odors too. Consists of a power supply and filter panel that replaces your present filter. Power is obtained directly from your furnace blower motor, or from a standard AC outlet (with accessory switch below). NOTE: Kits below differ in size of filter panel. Check your furnace's filter size/capacity before ordering. For two-zone homes, two filters may be used with a single power supply. CFM, cubic ft. per min.

Kit GD-1196-1, 20" x 25" x 2", 1000 CFM. Shpg. wt. 24 lbs. **189.95**
Kit GD-1196-2, 20" x 20" x 2", 800 CFM. Shpg. wt. 24 lbs. **189.95**
Kit GD-1196-3, 16" x 25" x 2", 800 CFM. Shpg. wt. 24 lbs. **189.95**
Kit GD-1196-4, 16" x 20" x 2", 640 CFM. Shpg. wt. 24 lbs. **189.95**

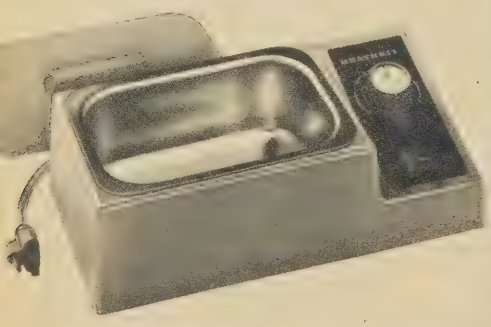
Extra Filters. Use order nos. above, with GDA prefix i.e., GDA-1196-1, 20" x 25" x 2" Filter only. Av. Shpg. wt. 10 lbs. ..... each **109.95**

Accessory Air Flow Switch. Lets you operate the GD-1196 from standard 120 VAC wall outlet. (Required when GD-1196 is used with 240 VAC furnaces and air conditioning systems.)

Kit GDA-1196-5, Shpg. wt. 2 lbs. **26.95**

GD-1196 SPECIFICATIONS: Air Cleaning Efficiency: 70% nominal. Generated Ozone Concentration: 0.02 PPM maximum. Static Pressure Drop: 0.15 in. w.g. (clean filter). Power Supply Dimensions: 12" W x 8" H x 4" D. Power Requirement: 110-130 VAC, 60 Hz. 25 watts max. Note: In some cases, a licensed electrician may have to make the electrical connections. Check with local building inspectors. Filter panels are 2" thick, so some adjustment in your present holding brackets may be required.

Ultra-convenient Ultrasonic Cleaner

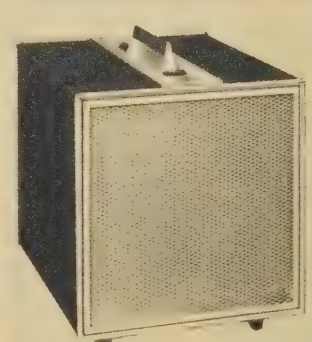


$74.95

Get the benefits of ultrasonic cleaning for those almost impossible cleaning chores. The Heathkit GD-1150 makes fast work of deep-cleaning watch parts, most jewelry, glass and contact lenses (except plastic), dentures, and even decorator paint brushes — any delicate items that could be harmed by scrubbing or abrasives. Simply fill the stainless steel tank with any safe detergent or solvent for the item to be cleaned. Place the object or objects in the tank, set the timer and that's it! You'll be amazed how quickly and easily your possessions come clean. Tank measures 6" L x 4" W x 2⅜" D. Overall, 11" L x 5¾" W x 3⅛" H. For 120 VAC.

Kit GD-1150, Shpg. wt. 4 lbs. **74.95**

Room-size electronic Air Cleaner



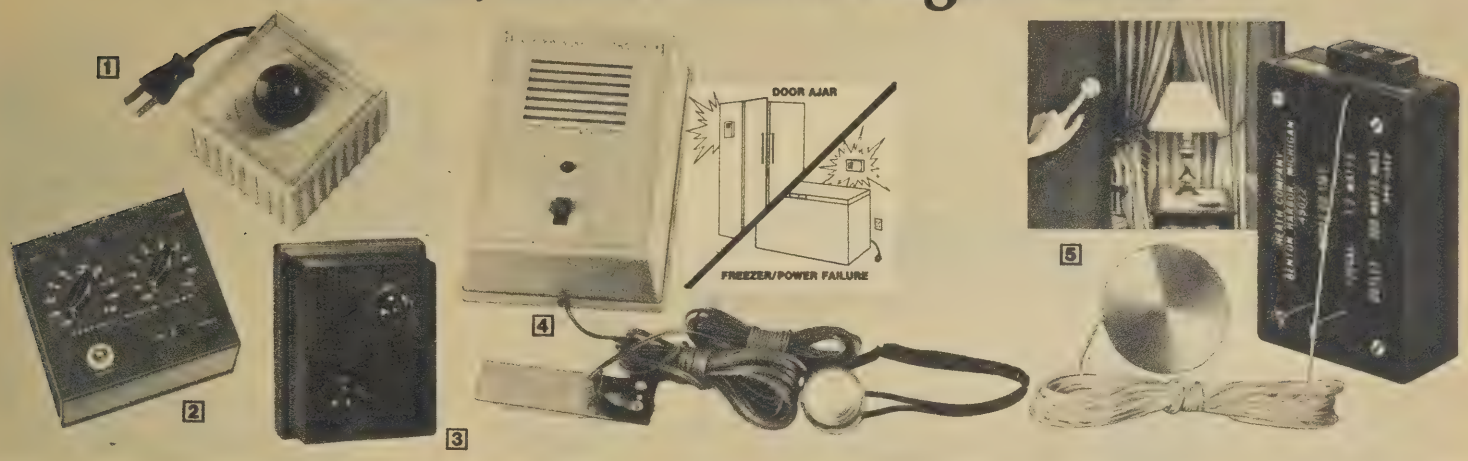
$159.95

Clean air is important in maintaining the overall good health of your family. And the Heathkit GD-1003 cleans the air of 99% of airborne pollen and 95% of other contaminants...regardless of size or concentration. The GD-1003 easily cleans the air in a 400 sq. ft. room, and it can be carried from room to room. Plugs into any 120 VAC electrical outlet. The two-speed fan is lifetime lubricated for trouble-free operation. Everything's accessible for easy cleaning, too. A built-in safety interlock switch offers positive shock-hazard protection while cleaning (should you forget to unplug the unit), and against the inquisitive fingers of small children. Cabinet of wood-grained vinyl-coated steel measures 15" H x 13½" W x 17¾" D.

Kit GD-1003, Shpg. wt. 55 lbs. **159.95**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Practical, fun-to-build beginner kits



1 Tabletop Lamp Dimmer

Smoothly adjusts the brightness of table or floor lamps up to 300 watts. Eliminates annoying burned out elements in 3-way bulbs, even helps bulbs last longer. For 120 VAC. Makes a great heat-control, too, for pencil-type soldering irons. 3¼" H x 3¼" W x 3¼" D.

Kit GD-1018, Shpg. wt. 2 lbs. **8.95**

2 Electronic Darkroom Timer

Has two switch-selected ranges — up to 99 seconds in 1 second steps or up to 9.9 seconds in 0.1 second steps. No moving parts to reduce reliability or accuracy. A time/focus switch turns the safelight off when focusing and printing. 2% accuracy. 3¼" H x 6⅝" W x 6½" D.

Kit PT-15, Shpg. wt. 4 lbs. **39.95**

3 Eye Spy® Photobeam Relay

Consists of a light source, a mirror assembly, and a photo-cell controlled relay which is activated whenever the light beam is broken. Any warning devices or lamps plugged into photocell are then activated. Works up to 25 ft. Electronics, 5⅜" H x 4⅜" W x 5¼" D. Mirror assembly, 5" H x 4" W x 2¾" D.

Kit GD-1021, Shpg. wt. 3 lbs. **16.95**

4 Freezer Alarm could save you money

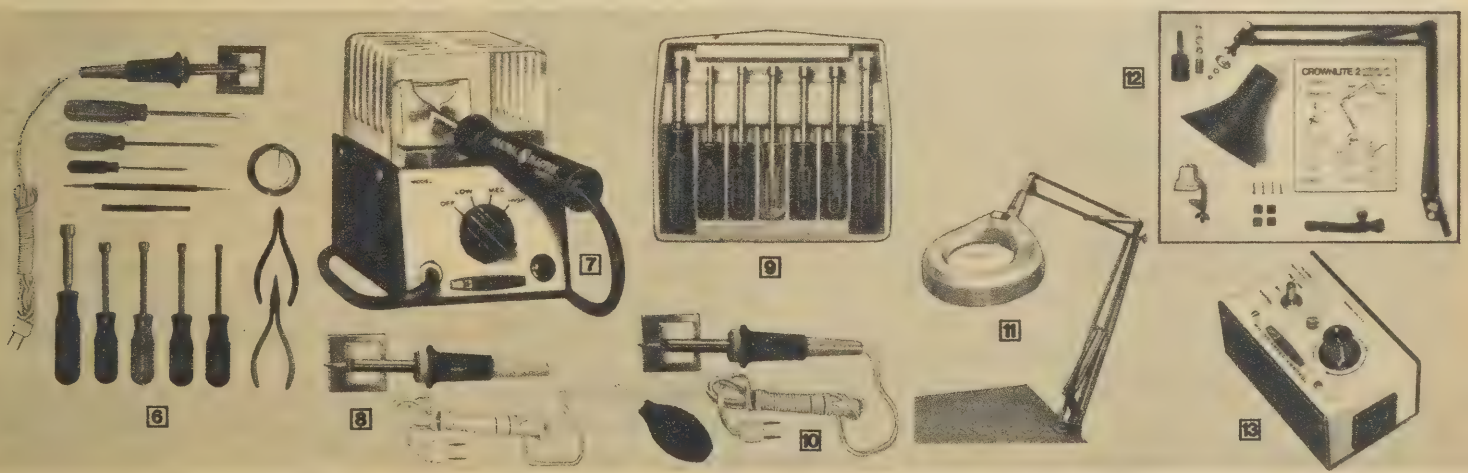
Provides two-way protection for the contents of your freezer — it signals if the freezer door is left open; and it signals if freezer temperature reaches 20°F even though the door is closed. The dual-alarm system uses both an audible "beep" and a flashing light. The alarm shuts off automatically when freezer temperature returns to about 10°F. Sensors install easily in any freezer. The alarm box mounts anywhere with 20-ft. cable supplied.

Kit GD-1183, Shpg. wt. 2 lbs. **15.95**

5 Mount-anywhere "touch-control" Light Switch with half-brightness position

Gives you on-off switch control wherever you need it, without the bother and expense of extra outlets, wall boxes and rewiring. Consists of a control unit and a touch plate. Simply plug your lamp (up to 150 watts incandescent) into the control unit, plug the unit into an AC outlet. The remote touch-plate mounts anywhere and connects to the unit by an easily concealed wire. Then simply touch the plate briefly for half-bright, longer for full "on", and touch again for "off". Control unit 1 11/64" x 2⅜" x 3 17/32". For 105-135 VAC, 60 Hz.

Kit GD-1187, Shpg. wt. 1 lb. **14.95**



Heath-approved tools for all your kitbuilding needs

6 Kitbuilders' Tool Set. Includes wire stripper/diagonal side cutter; small long-nose pliers; three screwdrivers (3/32", ⅛", 3/16"); Weller WP-25 soldering iron; five nut drivers (3/16", ¼", 5/16", ⅜", ½"); nut starter; soldering aid; and solder.

Model GH-25, Shpg. wt. 3 lbs. **32.95**

7 3-Heat Soldering Iron Kit. Handy stand with metal cage keeps iron safe and secure. 3 heat ranges. With six foot power cord. 120 VAC.

Kit GH-17A, Shpg. wt. 4 lbs. **26.95**

8 Heath-approved Weller 25-Watt Pencil Soldering Iron. ⅛" chisel tip develops 860° heat fast. U.L. and C.S.A. Approved.

Model GDP-207, Shpg. wt. 1 lb. **7.95**

9 Heathkit Nut Driver Set. 3/16", ¼", 5/16", ⅜", 11/32", 7/16" and ½" sizes.

Model GDP-204, Shpg. wt. 2 lbs. **11.95**

10 Heath Solder/de-Solder Set. Weller 25-watt pencil soldering iron that develops 860°. Includes de-solder squeeze bulb.

GDP-1009, Shpg. wt. 1 lb. **9.95**

11 Illuminated Magnifier. Fluorescent lighting and 5" diameter 3 diopter lens take the strain out of close work at your bench. Requires 22-watt T-9 Circline Fluorescent tube (not included).

Model GDP-200, Shpg. wt. 7 lbs. **39.95**

12 Extension Lamp Kit. The extension arm comes already assembled. All you do is attach the socket, shade and cord. Has 34" reach and 360° sweep; vented shade, and movable base clamp. Incandescent bulb not included.

Kit GDP-202, Shpg. wt. 4 lbs. **16.95**

13 Motor Speed Control. Saves power, blades, bits, saws, etc. Ideal for use with any universal motor with nameplate rating of 15 amps or less. (Not for use with Dremel tools).

Kit GD-973A, Shpg. wt. 2 lbs. **19.95**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Here's "Total Security" from Heath



Heathkit FM Wireless Security System — priceless protection

Protect your family and home — even your business — from thieves, fire, vandals — almost any kind of emergency. Our GD-1158 Security System provides the kind of protection and peace of mind you expect from expensive commercial systems — but at a fraction of their cost.

The GD-1158 System is wireless — just plug the modules into any AC outlet. All signals are frequency modulated (FM) to prevent false triggering caused by power line noise. And "wireless" design means your system can easily be moved to a new home or expanded to meet your changing needs.

The "heart" of the GD-1158 System is the Central Processor which sounds the alarm whenever it receives a signal from one of the remote modules. The modules can be added as you need them, so you can start with a modest investment, then add components to fit your requirements and your budget.

1 Central Processor Module sounds the alarm

The Central Processor responds to signals from any of the optional modules — ultrasonic detector, auxiliary transmitter, emergency transmitter, smoke and fire detectors. And you can use as many of the modules as you like to set up your "total" security system. The processor is protected from tampering by a circuit that sounds the alarm if AC power is lost. The Central Processor is designed for your convenience as well as security. A time delay lets you enter or leave the protected area without triggering the alarm. The Central Processor also automatically resets itself within two minutes after the cause of the alarm has been removed. Includes a penetrating built-in siren and outputs for an external speaker (such as GDA-1158-7) and our new GD-1156 telephone dialer. Batteries included.

Kit GDA-1158-1, Shpg. wt. 8 lbs. **179.95**

GDA-1158-1 SPECIFICATIONS: **Power requirement:** 115 VAC, 60 Hz. **Carrier frequencies:** emergency, 40 kHz. intrusion, 56 kHz. **Range:** any point on same power distribution transformer secondary. **Exit time:** 2 minutes. **Entry time:** 20 seconds. **Emergency activation time:** 2 seconds. **Disable time:** 1.5 sec. **Outputs:** external speaker, relay contacts, telephone dialer. **Sound Source:** switchable internal speaker or optional external speaker (12 watts into 8 ohms). **Sound level at 10 ft.:** internal speaker, +88 dB. **Dimensions:** 4½″ H x 10⅞″ W x 6″ D.

2 Ultrasonic Detector Module protects to 300 sq. ft.

You can place any number of these ultrasonic detectors within your customized security system (as long as coverage does not overlap). Each unit plugs directly into an AC outlet and monitors an area of up to 300 sq. ft. The detectors use harmless, inaudible high frequency sound waves to detect movement within the protected area. If an intruder enters the area, the detector will transmit a signal to the Central Processor which sounds the alarm. 10⅝″ H x 3¼″ W x 3¼″ D.

Kit GDA-1158-2, Shpg. wt. 3 lbs. **84.95**

NOTE: Since the GDA-1158-2 Ultrasonic Alarm operates in the same frequency range as Ultrasonic TV Remote Controls, interference between the two is possible.

3 Auxiliary Transmitter Module

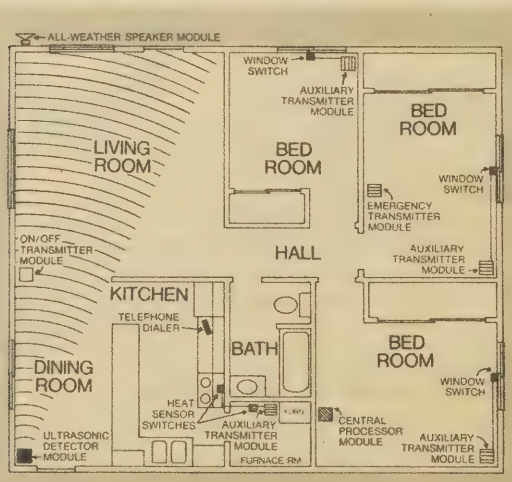
Lets you add door and window switches, mat pressure switches and any other sensors to the system. Switches must be either all normally open (N.O.) or all normally closed (N.C.) types. The transmitter then relays signals from the connected devices to the Central Processor. Plugs into any convenient AC outlet. 3¼″ H x 7¼″ W x 3¼″ D.

Kit GDA-1158-6, Shpg. wt. 2 lbs. **47.95**

4 Emergency Transmitter Module lets you sound the alarm for personal protection

No security system is complete without a dependable "panic button." So to provide that extra peace-of-mind and security, we've included this Emergency Transmitter Module in the design of the Heathkit Home Security System. The GDA-1158-4 sounds the alarm instantly, at the touch of a button. In any emergency situation, all you have to do is push the button and the unit transmits a signal to the Central Processor for an alarm. Put one in the bedroom, kitchen, den — anyplace where needed. Then just plug it into the nearest AC outlet. It's one of the extras that we feel makes the big difference between an "adequate" security system and one that gives you the added margin of protection your family deserves. 1¾″ H x 5″ W x 3¾″ D.

Kit GDA-1158-4, Shpg. wt. 2 lbs. **36.95**



Typical installation for complete home security

Our Heathkit Security System is designed for maximum versatility in your home. You can locate modules wherever you need them... even move them from room to room, to create a total home protection system. Use it to protect your business, too.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

[5] Smoke/Fire Detector



[6] On/Off Transmitter

[5] Early Warning Smoke/Fire Detector gives vital protection

One of the most important security devices you can own, gives you plenty of time to escape from deadly fire! Use as a vital link in your Security System, or by itself with its built-in speaker. Has a sensitive solid-state sensor that detects gases generated in the early stages of combustion and sounds the alarm *before* flames or intense heat. A built-in thermal switch also activates the alarm when the temperature exceeds 135°F (57°C). Simply install the unit in the area to be protected and plug into any AC outlet. When used with the complete security system, the alarm sounds through the speaker and is transmitted to the central processor; when used alone, the alarm sounds through the built-in speaker only. Has sensitivity control to prevent false triggering, "armed" light to indicate sensor has balanced and unit is ready to detect gases, automatic reset in case of power failure. 3¼"Hx7¼"Wx3¼" D.

Kit GDA-1158-5, Shpg. wt. 3 lbs. **84.95**

[6] On/Off Transmitter Module

The **only** way in which the intrusion part of your security system can be deactivated. Just plug the unit into an AC outlet in any convenient location, then push the button in to disable the intrusion circuits of the Central Processor. To turn the Central Processor back on again, just release the button, or unplug the transmitter. 1¾"Hx5"Wx3¾" D.

Kit GDA-1158-3, Shpg. wt. 2 lbs. **36.95**

Outdoor Speaker



Connects to GD-1158-1 Central Processor so alarm can be heard throughout your neighborhood... loud enough to frighten any would-be intruders and summon help. All-weather design. Includes hardware.

GDA-1158-7, Shpg. wt. 3 lbs. **24.95**

Informer® self-contained Ultrasonic Alarm for effective area protection



The Heathkit GD-39 Ultrasonic Intrusion Alarm sits quietly on bookshelf or table until something or someone invades its field of surveillance. Then "The Informer" can activate indoor buzzer alarms, outdoor bells, table or floor lamps... to alert you to the possible presence of an intruder as far as 25 ft. from the unit. Any movement that affects that transmitted signal in the room is perceived by the receiver, and the lamp outlet is triggered, turning on table or floor lamps. Approximately 30 seconds later, the alarm outlet is triggered, activating indoor or outdoor alarms. Built-in time delay between light and alarm allows you to enter room and deactivate the "Informer" without triggering the audible alarm. You can set the lamp and alarm for automatic reset after 25 seconds or have audible alarm continue to sound until manual reset. 2⅜" W x 10⅛" H x 7½" D. For 120/240 VAC.

Kit GD-39, Shpg. wt. 5 lbs. **54.95**

GDA-39-1, indoor buzzer alarm, Shpg. wt. 1 lb. **11.95**

GDA-39-2, outdoor bell, Shpg. wt. 6 lbs. **29.95**

NOTE: As the GD-39 Ultrasonic Alarm operates in the same frequency range as Ultrasonic TV Remote Controls, interference between the two is possible.

Low-cost photoelectric Lamp Switch



Great low-cost "insurance". Turns lights on in the evening, off in the morning — automatically. Helps discourage burglars while you're away from home by giving your home a "lived-in" appearance. Just plug it in to any wall outlet, adjust the sensitivity and the GD-600 does the rest. For incandescent lamps up to 150 watts. A great 1-evening get-acquainted kit.

Kit GD-600, Shpg. wt. 1 lb. **5.95**

Automatic Telephone Dialer and Coder "Calls out" in case of emergencies — brings help fast!

Perfect for vacation homes, warehouse areas, any remote location



- ***Dials ANY telephone number you program — and keeps dialing until it gets through***
- ***3-Digit Location Code lets them know exactly where dialer is located.***
- ***Microphone indicates any activity in vicinity of dialer***

Easy-access programming panel

The GD-1156 gives you that extra measure of security that means total protection! Whenever an alarm sounds, the Heath GD-1156 automatically dials the number you have programmed — police, fire, relatives, etc. A simple switch closure triggers the GD-1156, so it can be used with intrusion alarms, pressure switches, panic buttons, the Heath GD-1158 wireless FM Security System or others. Also can be triggered manually. It's the security device you NEED for cottages, small businesses, isolated plant areas, any place that needs protection but may be unoccupied. The GD-1156 can dial up to 12 digits: enough for access, area code and number, anywhere with direct-dial service. Features include: automatic re-dial if number is busy, a 3-digit location code that sends help rushing to the right location, a microphone to let you hear what's going on at the dialer. Solid-state for complete reliability; battery-powered so it operates even when AC power fails. The GD-1156 can also be used as an automatic dialer in non-emergency situations. 4¾" H x 11" W x 6" D. Batteries included. Check local phone company for installation requirements, if any.

Kit GD-1156, Shpg. wt. 7 lbs. **199.95**

NOW AT YOUR HEATHKIT ELECTRONIC CENTER: INSTANT CASSETTE COPYING!



Now you can make instant REZOUND™ copies of your cassettes at any Heathkit Electronic Center

FREE! Simply purchase the low-cost duplicator cassettes listed below and you can make perfect monaural copies of your cassette tapes in just minutes. Copy both sides at once and make up to three copies at the same time!

Here's a service that's perfect for the student, teacher, businessman or just about anyone who's interested in a quick, economical way to copy cassette tapes. Everything you need to make high quality cassette copies is in one convenient location. Copies so quickly that you'll scarcely believe it. But, just to be sure, you can play it back right on the spot. Copy cassettes are available in C60, C90 and C120 tapes.

Come in to your Heathkit Electronic Center now and take advantage of this fast, convenient new service. Price per copy listed below *includes* the copy cassette.

Duplicator Cassettes

C-33	1.89
C-63	2.59
C-93	3.39
C-123	4.39

When you buy your duplicator cassettes, you use the REZOUND instant copier FREE!

Blank Cassettes

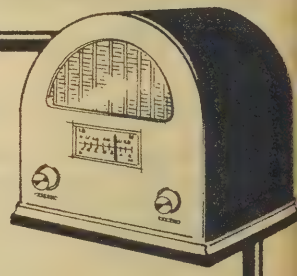
C-60	1.89
C-90	2.49
C-120	3.49

Miscellaneous Accessories

Ampex cassette mailing box	.35
Norelco Cassette Holder	.35
12-Cassette Album T12	5.98
16-Cassette Album T16	6.98

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ENJOY THESE OLD TIME RADIO SHOWS



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at the REZOUND CENTER

COMEDY

1. Abbott and Costello	Includes all-time classic, "Who's On First?"
2. Amos 'n Andy	"Leroy's Lock Invention" Hilarious! (1947)
3. Amos 'n Andy	"10,000th Show" — Excerpts from Old Shows (1952)
4. Amos 'n Andy	"Car Theft and the Kingfish" (1946)
5. Amos 'n Andy	"The Fur Coat Scheme" (Date Unknown)
6. Fibber McGee & Molly	"Fibber Models A Dress For Molly" (3/2/49)
7. Fibber McGee & Molly	"Advice Column" A real Must for Collectors! (6/13/39)
8. Fibber McGee & Molly	"Escaped Convicts" (5/30/39)
9. The Bickersons	"Argument at Breakfast/Bedtime on a Fishing Boat"
10. W. C. Fields	"W.C. and Charlie McCarthy Debate"
11. W. C. Fields	"The Day I Drank A Glass of Water"
12. Jack Benny Show	"Al Jolson & Kenny Delmar" (Best Show of 1944)
13. Jack Benny Show	"The Ink Spots & Bing Crosby" (1948)
14. Jack Benny Show	From St. Alban's Hospital w/Fred Allen (2/4/45)
15. Jack Benny Show	From Palm Springs with Eddie Cantor (2/10/46)
16. Bergen & McCarthy	"Bergen's Birthday with W. C. Fields"
17. Fred Allen Show	"What Is The Worst Storm You Remember?" (1/4/48)
18. Fred Allen Show	"Ever Been Victimized By Misadvertising?" (4/11/48)
19. Lum and Abner	"The Boys Get Tricked Into Graveyard Plots" (1946)
20. Burns and Allen	"George and Gracie Play Counter-Cupid"
21. Bob and Ray	"Bits & Pieces" — Their Best Comedy Routines
22. Maxwell House Coffee Time	"Baby Snooks and Daddy" (1940 Classic)
23. The Great Gildersleeve	"Jolly Boys Band" with H. Peary (1949)

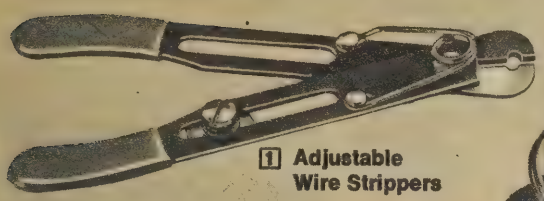
MYSTERY & DRAMA

24. Mercury Theater Part I	"War Of The Worlds" — Welles' 1938 Classic
25. Mercury Theater Part II	"War Of The Worlds" Part II
26. Mercury Theater Part I	"Dracula" w/Welles and Martin Gabel
27. Mercury Theater Part II	"Dracula" Part II
28. The Shadow	"Death From The Deep" w/Orson Welles
29. The Shadow	"The Shadow Challenged" — two Shadows?
30. The Shadow	"The Ghost of Caleb MacKenzie" (1941)
31. Inner Sanctum	"Till Death Do Us Part" (10/16/45)
32. Inner Sanctum	"Murder At Midnight" (4/30/36)
33. Lights Out	"Cat Wife" w/Boris Karloff (1938)
34. Lights Out	"Story of Mr. Maggs" — (12/1/42)
35. The Green Hornet	"A Matter of Evidence"
36. The Green Hornet	"The Ghost Who Talked Too Much"
37. Academy Award	"The Maltese Falcon" — Bogart
38. The Lone Ranger	"The Return of Butch Cavendish"
39. The Lone Ranger	"Burt Akley/Windy Burton Gang"
40. Suspense	"Love's Lovely Counterfeit" w/Bogart
41. The Whistler	"Hit And Run" (5/14/45)

SPECIALTY

42. Golden Days of Radio I	Crosby, Hope, Amos & Andy, Benny, more
43. Golden Days of Radio II	Sinatra, Mel Blanc, Colonna, and more
44. Your Hit Parade	"Near You" w/Frank Sinatra & Doris Day
45. Your Hit Parade	"Nature Boy" w/Frank Sinatra & Beryl Davis
46. Kraft Music Hall	Jolson, Levant & Bogart (1948)
47. 50 Radio Commercials	Radio's Golden Days
48. Kraft Music Hall	Jolson, Levant & Bendix (1947)
49. CBS News Roundup	"Pearl Harbor Attacked" (12/7/41)
50. Hindenberg Airship Disaster	Original Broadcast (5/6/37)

Fine Tools Make Kitbuilding Even Easier



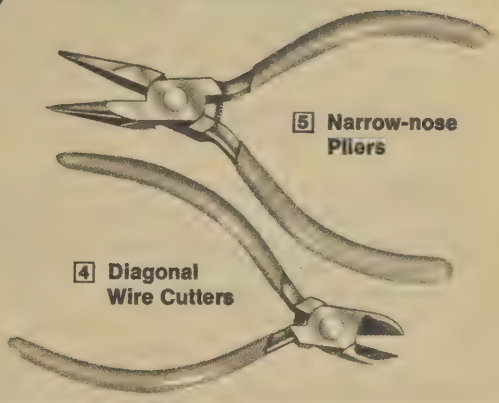
[1] **Adjustable Wire Strippers**



[2] **Desoldering Bulb**



[3] **Soldering Iron Holder**



[4] **Diagonal Wire Cutters**

[5] **Narrow-nose Pliers**

[1] **Adjustable Wire Strippers** — Honed cutting edges cut and strip stranded or solid insulated wire. Positive adjustment can be preset for any wire size from #10 to #20 gauge. Quality spring steel. Plastic handles have spring action. Overall length 5¾″

Model 55BB 1.88

[2] **Desoldering Bulb** — For quick and easy removal of solder. Place tip near melted solder, squeeze and release bulb. Zip — excess solder is removed!

Model ACP-303 .....2.25

[3] **Soldering Iron Holder** — By Weller. Designed for the Heathkit/Weller pencil-type irons on page 45. Heavy base prevents tipping. Includes built-in sponge tray and sponge.

Model PH-60 .....5.95

Replacement Soldering Iron Tips (not shown) For your Heathkit/Weller Pencil-type iron. Screwdriver tip design.

Model ST-1	1/16″ Wide	1.30
Model ST-2	3/32″ Wide	1.30
Model ST-3	1/8″ Wide	1.30
Model ST-4	3/16″ Wide	1.30

[4] **Diagonal Wire Cutters** — Semi-flush cut cuts at extreme tip. For very fine work (#20 gauge or smaller soft copper wire). Blue plastic handles. Overall length 4″.

Model A97MS 5.44

[5] **Narrow-nose Pliers** — For precision pick-up, looping, twisting and bending of finest wire. Serrated tips give firm grip with minimum pressure. Blue plastic handles. Overall length 4¾″.

Model A11DMS 5.44

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Amount Due_____

Check ☐ M.O. ☐ Charge ☐

*Your order will be shipped via the most efficient way available. Call your nearest Heathkit Center for shipping charges (if any).

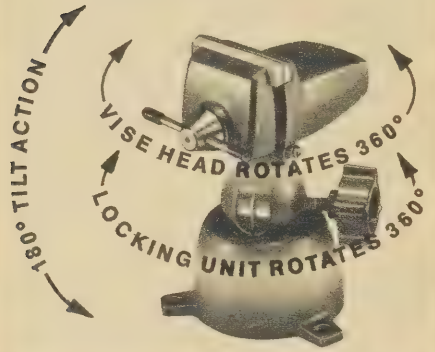
HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE

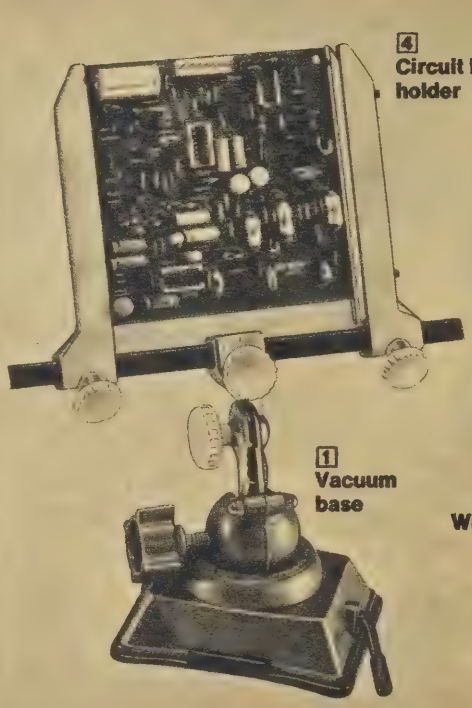
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Here's the handiest kitbuilding tool EVER!

PANAVISE®

- *Simplifies any hobby work*
- *Convenient Single-Knob Operation*
- *Choose exactly the base and vise head you need for the job, or buy the complete system for "total" working versatility*





4 Circuit board holder

6 Vertical jaw vise head

3 Standard height base

1 Vacuum base

5 Wide opening vertical vise head

2 Low profile base

This could be the most versatile tool you'll ever use. Holds just about anything at the angle best for any job, leaves your hands free for soldering, positioning, mechanical assembly, etc. The head rotates a full 360 degrees and tilts 90 degrees from vertical to horizontal. A single, convenient knob locks the vise in the position you choose. It's ideal for kit building, hundreds of other uses! Base sold separately. Choose from three different styles of vise heads and bases below.

Choose the base to fit your workbench!

1 **Vacuum Base** — Attaches securely to any smooth, non-porous surface with just a half-turn of the mounting lever. Powerful rubber suction pad holds without marring tabletop. Perfect for tabletop applications where permanent mounting is not practical. Overall height 3 3/16". Base dimensions 5" x 4 1/4".

Model 380 ..... **16.95**

2 **Low Profile Base** — Just right for those situations where work must be positioned close to the bench surface. The front of the base is straight to permit mounting flush with the edge of the bench. Overall height 2 5/8". Base diameter 5".

Model 305 ..... **11.95**

3 **Standard Height Base** — Designed for permanent installation and normal applications. Three mounting lugs let you attach it securely to the work surface. As with above two bases, choose desired vise head from three styles listed below.

Model 300 ..... **11.95**

Pick the positioners to solve your problem!

4 **Circuit Board Holder** — Perfect for kitbuilding. This "third hand" holds most any shape or size of circuit board in just the right position. The right arm is spring loaded to facilitate quick change. Support tilts 220 degrees.

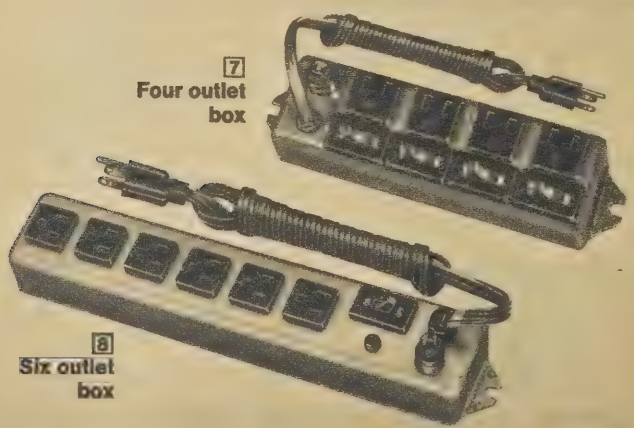
Model 315 ..... **16.95**

5 **Wide Opening Vertical Vise Head** — Holds bulkier items — model parts, chassis, etc. — firm and secure in any position. Jaws open to 6 1/2". Neoprene pads are reversible and replaceable.

Model 366 ..... **10.00**

6 **Vertical Jaw Vise Head** — For most standard hobby applications. Nylon jaws open to 2 1/4" and provide a firm grip, without marring the object to be worked on.

Model 303-1 ..... **10.00**



7 Four outlet box

8 Six outlet box

Multi-Outlet Boxes let you put electrical outlets anywhere you need them

A must for the workshop, test or hobby bench, ham shack, just about anywhere. Gives you additional electrical outlets for real versatility in setting up equipment. Outlets are fuse-protected, grounded and individually-switched. Available in four and six outlet versions. Convenient mounting tangs make possible semi-permanent wall or floor mounting.

Use subject to local electrical zoning codes.

7 **Four Outlet Box.**
Model JB-40G **14.88**

8 **Six Outlet Box.**
Model JB-60G **14.88**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

THE PRESIDENT'S CORNER



Dear Friends,

Since 1952 Heath has been the leader in Amateur Radio. Almost everyone who holds a License has used Heath gear at one time or another, and many use Heath equipment exclusively.

We're proud of that because many of us here at Heath are Hams ourselves. *We* know how interesting and worthwhile Amateur Radio is and we would like more people to discover this rewarding hobby.

Many people who are interested just don't know how to get started or are afraid they wouldn't pass the required FCC Exam. Our new Amateur Radio Novice Course is designed for them. We've taken all the information you need to pass the FCC Novice Exam and incorporated it into one of our Learn-at-Home Courses. It's a really easy and effective way to learn about Amateur Radio, with programmed instructions that let you proceed at your own pace, without pressures or deadlines. It's been written by the Hams here at Heath, to give you the background you need to pass your FCC Novice Exam the first time.

In fact, we're so confident of your success, that if for any reason you don't pass the exam, we'll refund your money! And when you get your License (as we know you will), we'll even give you a discount certificate for Heath Amateur Radio equipment. It's a really easy, foolproof way of getting into the fascinating Amateur Radio hobby. Read more about it on pages 56 and 95 of this catalog.

We feel the Amateur Radio Course is an important addition to our complete line of Amateur Radio equipment. It's part of our continuing commitment to Hams, and would-be Hams, everywhere.

73

D. W. Nurse

David W. Nurse, *President*
W8GCD

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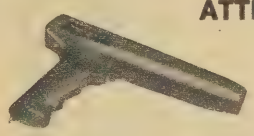
ATTENTION ENGINEERS

Our growth has resulted in engineering openings in the following areas: RF Communications, Test Equipment, Mechanical Packaging, Automotive Test Equipment, and Manufacturing. If you seek a new challenge and possess a BS or MS in Engineering, send us your resume and salary requirement in confidence. We are an Equal Opportunity Employer M/F.

Copies of the Heathkit warranty or warranties for any other consumer product in this catalog costing more than $15 may be obtained free of charge by writing the Heathkit Electronic Center nearest you, or the Director of Retail Operations, Schlumberger Products Corporation, P.O. Box 167, St. Joseph, MI 49085.



FOR FASTEST SERVICE — CALL YOUR HEATHKIT ELECTRONIC CENTER — See below



ATTENTION: GD-1380 TV Game Owners

The GDA-1380-1 Target Accessory is now available. Add two exciting games to your present GD-1380.

GDA-1380-1, Shpg. wt. 2 lbs. **19.95**

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1900 Veterans Memorial Hwy.
Phone: 504-722-6321

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Rockville, 20852
5542 Nicholson Lane
Phone: 301-881-5420

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(Rt. 9 just west of Rt. 128)
Phone: 617-237-1510

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15 Jericho Turnpike
Phone: 516-334-8181
Rochester, 14623
937 Jefferson Rd.
Phone: 716-244-5470
White Plains
(North White Plains, 10603)
7 Reservoir Rd.
Phone: 914-761-7690

OHIO
Cincinnati (Woodlawn, 45215)
10133 Springfield Pike
Phone: 513-771-8850
Cleveland, 44129
5444 Pearl Rd.
Phone: 216-886-2590
Columbus, 43229
2500 Morse Rd.
Phone: 614-475-7200
Toledo, 43615
48 So. Byrne Rd.
Phone: 419-537-1887

PENNSYLVANIA
Philadelphia, 19149
6318 Roosevelt Blvd.
Phone: 215-288-0180
Frazer (Chester Co.) 19355
630 Lancaster Pike
Phone: 215-647-5555
Pittsburgh, 15235
3482 Wm. Penn Hwy.
Phone: 412-824-3564

RHODE ISLAND
Providence (Warwick, 02886)
558 Greenwich Ave.
Phone: 401-738-5150

TEXAS
Dallas, 75201
2715 Ross Ave.
Phone: 214-826-4053
Houston, 77027
3705 Westheimer
Phone: 713-623-2090

VIRGINIA
Norfolk
(Virginia Beach, 23455)
1055 Independence Blvd.
Phone: 804-460-0997

WASHINGTON
Seattle, 98121
2221 Third Ave.
Phone: 206-682-2172

WISCONSIN
Milwaukee, 53216
5215 W. Fond du Lac
Phone: 414-873-8250

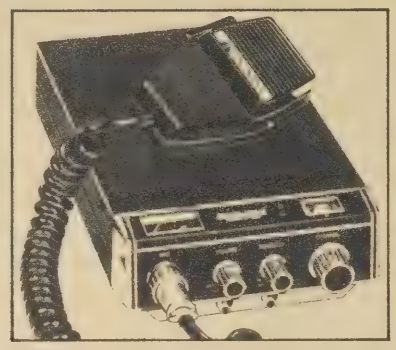
INDEPENDENT DISTRIBUTORS: ALASKA: Yukon Radio Supply 1) 1231 West Northern Lights Blvd., Anchorage 99503, Phone 907-274-4423; 2) 1112 Cushman St., Fairbanks 99701, Phone 907-452-1011; 3) Box 623, Valdez 99686, Phone 907-835-4880.

OPENING SOON: San Jose, California; Arlington, Virginia

Heath-recommended 40-CHANNEL CB Two-way

MIDLAND INTERNATIONAL

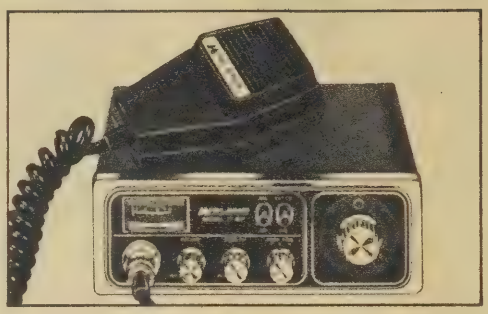
Heath Price **$114.95**



Midland 40-channel mobile rig

Model 77-830. Compact 40-channel unit has top-mounted S/RF meter, transmit light and lighted channel indicator for easy viewing while driving. Dual conversion superhet receiver has tuned RF, AGC, built-in noise limiter, full-range variable squelch. Has high-filter switch for clear reception, a phase-locked-loop tuning circuit for good selectivity. External CB speaker and PA switches. With PTT mike, cord. 2¼″ H x 5⅛″ W x 9″ D. For 12 VDC positive or negative ground.

GWP-2194, Shpg. wt. 5 lbs. Assembled **114.95**



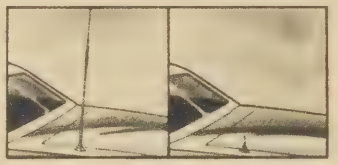
Heath Price **$129.95**

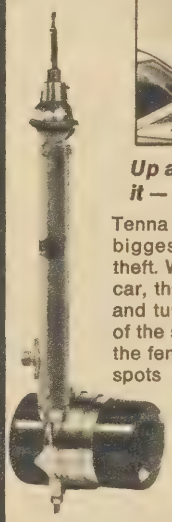
Midland 40-channel mobile with Delta-tuning

Model 77-857. Here's outstanding operating convenience and versatility. Precise synthesized-crystal system covers all 40 CB channels. Delta fine-tuning adjusts ±1 kHz to pull in "off-center" signals. Has dual-conversion superhet receiver, tuned RF stage, AGC, switchable ANL, active automatic gain control and variable squelch. Lighted S/RF meter and channel indicator, built-in speaker and provision for external speaker. With PTT mike and coiled cord, mounting bracket. 2¼″ H x 6⅜″ W x 7⅞″ D. For 12 VDC positive or negative ground.

GWP-2195, Shpg. wt. 6 lbs. Assembled **129.95**

Retractable Electric Mobile CB Power Antenna



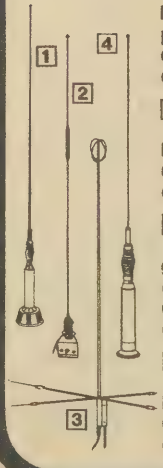


Up and operating when you want it — out of sight when you don't.

Tenna CBE-10. The answer to one of the biggest problems CB'ers have today — theft. With a flick of the switch inside your car, the antenna extends to its full height and turns your CB radio on. Another flick of the switch, the antenna disappears into the fender and turns the radio off. No one spots your CB antenna — the giveaway that there's a rig in your car. Has adjustable SWR, waterproof seals, dual chrome-plated mast. With 18′ RG-58/U coax, cable, all hardware.

GDP-110, Shpg. wt. 8 lbs. **59.95**

SAVE on CB Antennas, too!



1 **A-S M-176 "Quick-Grip" Mobile Antenna.** Trunk lid mount (no holes to drill). 46″ high. Weatherproof coil; 17′ coax. Shpg. wt. 3 lbs.
GDP-2121, with purchase **19.95**
GDP-2121, if purchased alone **29.95**

2 **A-S MR-180 "Flipper" Mobile Antenna.** Raingutter mount (no holes to drill). With 10′ coax. 3 lbs.
GDP-2122, with purchase **16.95**
GDP-2122, if purchased alone **22.95**

3 **A-S M-117 "Super Magnum" Base Antenna.** ½ wave end-fed; gives 3.75 dB gain, improves S/N 6 dB! Static-reduction ball. 9 lbs.
GDP-2120, with purchase **29.95**
GDP-2120, if purchased alone **39.95**

4 **A-S M-125 Rooftop Mobile Antenna.** Snap mounts in ⅜″ hole. Loading coil. 46″ h; 17′ coax. 3 lbs.
GDP-2123, with purchase **17.95**
GDP-2123, if purchased alone **22.95**

Royce

Heath Price **$139.95**



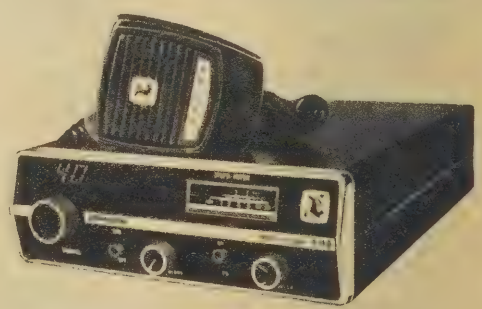
Royce mobile CB Radio with Gyro-Lock

Model 675. Features Gyro-Lock (Phase Lock Loop) circuitry for 40-channel transmit/receive on Royce's famous "wireless" chassis. Has a big illuminated S/RF meter, continuous fine tuning control, pushbutton automatic noise limiter, pushbutton PA/CB switch, pushbutton RF gain control. AMC for maximum "talk power;" LED transmit light. Full-size plug-in microphone. Modular-design chassis for reliability, with jacks for external/PA speaker. 2⅜″ H x 7⅞″ W x 8⅜″ D. 12 VDC positive or negative ground operation; power cord included.

GWP-2184, Shpg. wt. 8 lbs. Assembled **139.95**

JOHNSON

Heath Price **$149.95**



Low-priced Johnson 40-channel mobile

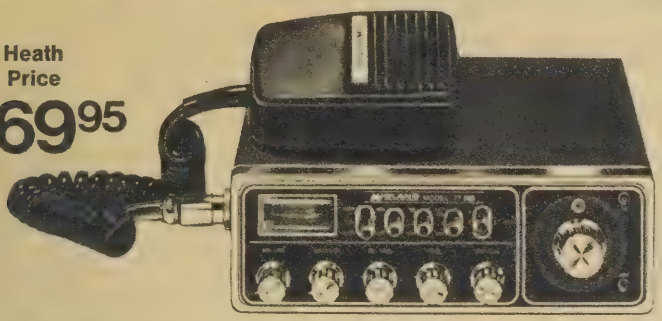
Messenger 4140. An excellent choice for the mobile CB'er on a budget! All solid-state with electronic speech compression for more effective range, "Tapered Automatic Noise Limiter" that adjusts to varying noise levels for clean reception under all conditions, ANL switch, signal-strength/power meter. Has volume and squelch controls, LED channel readout, PA function and more. 2″ H x 6.2″ W x 8.9″ D. For 12 VDC positive or negative ground.

GWP-2170, Shpg. wt. 6 lbs. Assembled **149.95**

See page 43 for informative CB books.

Radios! Get on-the-air with the latest for less!

Heath Price **$169.95**



Midland 40-channel mobile with volume on mike

Model 77-888. Offers super-quality and convenience with an extra volume control on the mike for easy use while driving, phase-locked-loop synthesizer for complete 40 channel operation without extra crystals. Has light S/RF/SWR meter, built-in SWR bridge and calibrator for tuning antenna. Has PA function, audio tone control, noise blanker, ANL and Delta-tune. Antenna Warning Light indicates excessive VSWR. With PTT mike, coiled cord and mounting bracket. 2¼" H x 7" W x 8¼" D. "Omni-power" operation for any 12-volt system, positive or negative ground.

GWP-2196, Shpg. wt. 7 lbs. Assembled **169.95**

Heath Price **$249.95**

SUPER BUY ON LATEST SSB!



Midland 40-channel SSB/AM mobile CB Transceiver

Model 79-892. Gives you all 40 AM CB channels plus upper and lower sidebands for a total of 120 operating channels and more range than AM. Delivers 4-watt output (12 watts PEP SSB). Has SSB clarifier control, RF gain control, noise blanker, hi/lo tone switch, PA switch, S/RF meter. With mike and mounting bracket. 2½" H x 7½" W x 9½" D. For 12 VDC positive or negative ground.

GWP-2197, Shpg. wt. 8 lbs. **249.95**

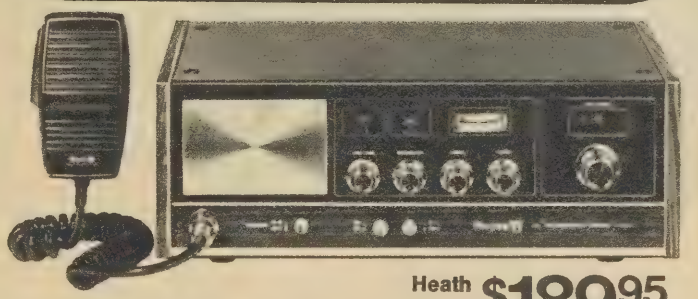
Heath Price **$149.95**



Royce digital 40-channel mobile CB

Model 680. Feature-packed all-channel CB 2-way radio has a digital readout dial system that shows channel selection in bright LED numerals. Gyro-Lock (Phase Lock Loop) 40-channel crystal system. Big S/RF meter, pushbutton ANL and PA/CB switches, fully variable squelch control. IC audio stage with 6-watt RMS output. Amplified AGC; 3 ceramic filters; tuned RF stage in the dual conversion receiver. AMC circuit for peak "talk power." Jacks for external/PA speakers. Rugged vinyl-clad metal cabinet. 2⅜" H x 8⁹⁄₁₆" W x 8¹³⁄₁₆" D. For 12-volt DC positive or negative ground. Includes mike, DC cord.

GWP-2185, Shpg. wt. 6 lbs. Assembled **149.95**

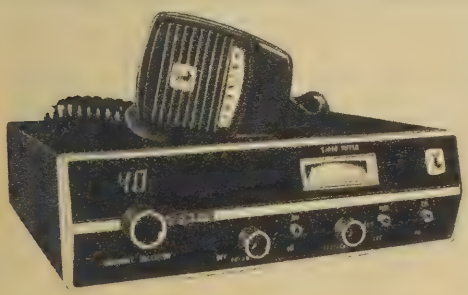


Heath Price **$189.95**

Royce 40-channel Base Station

Model 621. Has all the convenience features you could want in your CB base station. Sophisticated styling, too, with walnut end panels, charcoal gray top, black control panel and satin aluminum grille. Dual power supply operates from 117 VAC or 12 VDC. Variable tone control, automatic noise limiter, delta tuning, tape recorder jack, variable squelch. Dual conversion receiver has ceramic filter for razor-sharp selectivity. Big channel readout dial; illuminated S/RF meter; bar-type Transmit and Modulation lights. 4½" H x 12" W x 8" D.

GWP-2186, Shpg. wt. 13 lbs. Assembled **189.95**



Heath Price **$219.95**

Johnson deluxe 40-channel mobile

Messenger 4170. For the serious mobile CB'er, a rig that's really loaded! 40 channels, dual crystal filtering for spectacular freedom from interference, local/normal/extended range control for excellent transmission and reception under all operating conditions, electronic speech compression, tapered Automatic Noise Limiting. Has PA function, external speaker jack, S/RF meter. With coiled cord microphone, mounting bracket. 2⁵⁄₁₆" H x 8" W x 9" D. For 12 VDC positive or negative ground.

GWP-2171, Shpg. wt. 9 lbs. Assembled **219.95**

Heath Price **$219.95**



Johnson 40-channel Base Station CB Transceiver

Messenger 4230. One of the best 40-channel CB radios around — loaded with famous Johnson features! Switchable TANL, electronic speech compression, exclusive LED "bar-graph" meter for easy reading of signal strength and relative power, LED channel readout, range control switch, PA function, external speaker jack. Operates from 117 VAC, 60 Hz or 12 VDC negative ground. 4¹⁄₁₆" H x 11¹⁄₁₆" W x 11³⁄₁₆" D. With PTT microphone, coiled cord.

GWP-2172, Shpg. wt. 11 lbs. Assembled **219.95**

CB radios are offered subject to FCC acceptance.
Final models may vary slightly in appearance.

Keep Tabs on your Transmitter

New



New HD-1426 Field Strength Meter

$12.95

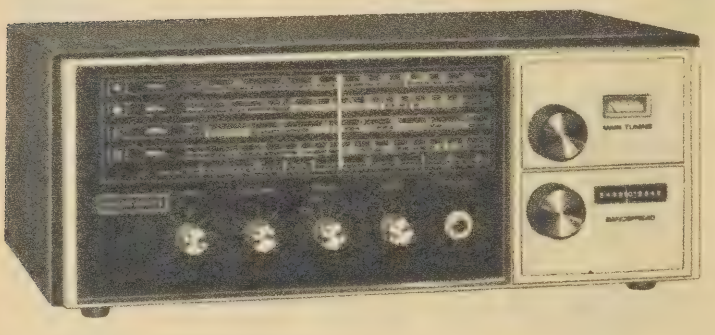
- *Built-in and external antennas*
- *Front panel sensitivity control*
- *Allows precise transmitter adjustment*

A must for ham, citizens band and marine radio enthusiasts. This compact, reliable unit may be used in a mobile or fixed location to measure signals of 1.8 MHz to 250 MHz received from a transmitter. Makes transmitter and antenna adjustments quicker and more precise; lets you know transmitter is actually operating (ideal for marine applications). For transmitter outputs from 1 to 1000 watts. A front panel mounted sensitivity control may be used to adjust the on-scale meter reading. Both a built-in printed circuit antenna and a whip antenna are included.

Kit HD-1426, Shpg. wt. 2 lbs. **12.95**

HD-1426 SPECIFICATIONS: Frequency Range: 1.8 MHz to 250 MHz. Meter Accuracy: ±10% of full-scale reading. Dimensions: 2⅝" H x 4⅛" W x 4⅜" D.

Heath makes "Just Listening" fun —and exciting!



4-Band Shortwave — just right for the beginner

$79.95 *Listen in on World-wide Shortwave broadcasts, CB, marine — even AM radio*

If you're looking for a great first-time kit — or just a great low-priced shortwave receiver — the SW-717 is for you. It's an ideal introduction to kit construction — and the assembled radio will bring you years of entertainment.

Tunes foreign broadcasts from all over the globe — amateur and CB radio bands — local and marine weather reports — ships at sea — plus standard AM — it's a world of exciting listening at your fingertips!

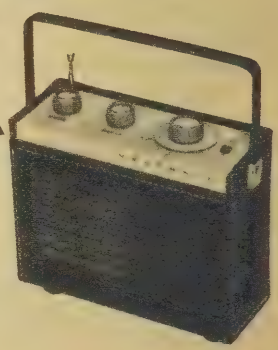
Features wide slide-rule tuning dial with logging scale; bandspread tuning for easy separation of crowded stations, variable BFO for code reception; built-in speaker; front panel jack for external speaker or headphone; switchable automatic noise limiting; signal-strength tuning meter; built-in AM rod antenna plus connection for SWL antenna. It's the one to buy and build to start a fascinating kit hobby!

Kit SW-717, Shpg. wt. 10 lbs. **79.95**

SW-717 SPECIFICATIONS: Frequency coverage: 550 kHz - 1500 kHz, 1.5 — 4 MHz. 4 — 10 MHz. 10 — 30 MHz. Meter: Indicates relative signal strength. Headphone Jack: Accepts low impedance headphone or external speaker. Loudspeaker: Built-in. Power Requirement: 120/240 VAC, 60/50 Hz, 8 W. Dimensions: 5⅓" H x 14½" W x 8" D.

Exciting Portable VHF/FM Monitor

SAVE $7



Was $49.95 NOW $42.95

Covers 152-174 MHz VHF for fascinating local police, fire and emergency service listening! Has telescoping antenna to help pull in stations, rugged case with carrying handle for easy portability. It's an easy and enjoyable kit to build too, ideal for first-time builders. Tunes the complete band, no extra crystals are needed.

Kit GR-88, Shpg. wt. 5 lbs. .....**Was $49.95 — NOW 42.95**

GR-88 SPECIFICATIONS: Tuning Range: 152-174 MHz. Antenna Input: 50-75 ohms. Sensitivity: 2.0 μV or less for 20 dB quieting. IF Selectivity: ±40 kHz @ 6 dB down. Image Rejection: 40 dB or greater. IF Rejection: 80 dB or greater. Speaker: 3" round. Batteries: Six 1.5 V "C" cells, not supplied. Dimensions: 7½" H x 8¾" W x 3½" D.



NEW! Emergency Radio Directories

Latest edition. Lists city, county and state emergency services. Order the one for your region.

GRA-1100-10, Vol. 1 — Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont **4.95**

GRA-1100-11, Vol. 2 — Delaware, Maryland New Jersey, Pennsylvania **4.95**

GRA-1100-12, Vol. 3 — Ohio, Michigan **4.95**

GRA-1100-13, Vol. 4—Illinois, Indiana, Kentucky, Wisconsin **4.95**

GRA-1100-14, Vol. 5 — Iowa, Kansas, Minnesota, Missouri, Nebraska, North and South Dakota **4.95**

GRA-1100-15, Vol. 6 — DC, Florida, Georgia, North Carolina, South Carolina, Virginia, West Virginia **4.95**

GRA-1100-16, Vol. 7—Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, Texas **4.95**

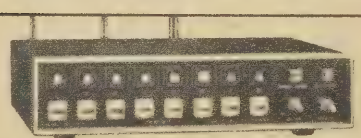
GRA-1100-17, Vol. 8 — Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming **4.95**

GRA-1100-18, Vol. 9 — California, Oregon, Washington **4.95**

SWL Accessories

Superex Headphones. Ideal for use with both Heathkit SWL's above, many others. Feature dual coils for excellent sensitivity, wide headband for comfortable listening. 600 ohms impedance.
GD-396, assembled. Shpg. wt. 1 lb. **5.95**

Long-wire SWL antenna. Really helps you pull in stations! 75' long wire with 30' lead-in, all insulators and hardware for easy setup. A must for serious listeners. **GRA-72,** Shpg. wt. 2 lbs. **4.50**



See the exciting GR-1132 3-Band VHF/UHF Scanning Monitor on page 2.

Informative SWL books

SWL Guide. Invaluable reference for beginners or "Pros" - Latest updated edition lists call signs, frequencies and addresses for Shortwave, FM and TV stations worldwide. Easy-to-read type and tables. **GDP-315,** 2 lbs. **10.95**

Shortwave Listener's Handbook — covers basic equipment to modifications, characteristics of receivers and antennas, schedules and reception reports, lists major shortwave stations by country and frequency. **EDP-196** **4.90**

ABC's of Shortwave Listening — programs available, how to enjoy SW listening; receivers and antennas in non-technical terms. **EDP-154** **3.50**

99 Ways to Improve your Shortwave Listening — antennas and their installation, receivers, accessories, listening techniques, special bands, trouble-shooting. **EDP-155** **4.50**

How to Hear Police, Fire and Aircraft Radio — a guide to VHF reception; home and mobile installations. **EDP-156** **3.50**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Useful Heathkit station accessories

Add more versatility to transceivers and separates with these accessories...

Heathkit solid-state Dip Meter delivers more performance at big savings

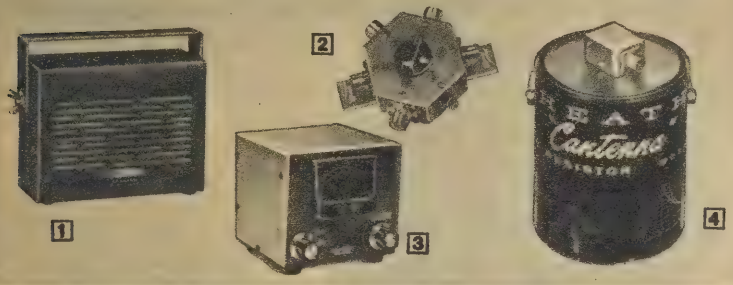
Another Heath value triumph — a better dip meter at lower cost. The Colpitts oscillator covers 1.6 to 250 MHz in fundamentals with a MOS-FET paraphase amplifier and hot-carrier diodes for more sensitivity and a better dip. It uses a Q-multiplier for greater detector sensitivity and a responsive 150 μA meter movement for positive resonance indications. It includes a phone jack for modulation monitoring. It's smaller and lighter than others, too. Completely portable. Whether you're checking resonant frequencies, adjusting traps, looking for parasitics, or using it as a signal generator, the HD-1250 is designed to go anywhere. It fits your hand and thanks to its solid-state design and 9-volt battery operation, it's ready to use instantly wherever you are. The custom molded gray carrying case protects the meter and the 7 color-coded, pre-adjusted, plug-in coils in transit, and makes a handy storage place.

Build it in one evening. Nearly everything mounts on two circuit boards. And when you finish, you'll have the best dip meter around — for a lot less money.

Kit HD-1250, less battery, Shpg. wt. 4 lbs. **69.95**



Here's low-cost operating convenience



1 Heathkit Mobile Speaker for improved audio

8 ohm speaker in rugged steel cabinet. Gimbal mount for fast and easy installation included. 6½" W x 4¾" H x 2½" D.
Kit HS-24, Shpg. wt. 4 lbs. **16.95**

2 Heathkit Coax Switch for multiple antennas

Switches RF source to any one of several antennas or loads; unused outputs grounded. Use two to switch up to four different transmitters, receivers, etc. 1.1:1 max. SWR to 250 MHz. 2 kW PEP max. power rating.
Kit HD-1234. Shpg. wt. 1 lb. **11.95**

3 Low-priced Heathkit VHF Wattmeter

Reads 1-25 and 10-250 W FS. Built-in SWR bridge, adjustable sensitivity.
Kit HM-2102, Shpg. wt. 4 lbs. **39.95**

HM-2102 SPECIFICATIONS: Frequency Range: 50 MHz to 160 MHz. Wattmeter Accuracy: ±10% of full-scale.* Power Capability: To 250 W. SWR Sensitivity: Less than 10 W. Impedance: 50 ohms nominal. Connectors: UHF type SO-239. Dimensions: 5¼" W, 5¼6" H and 6½" D. *Using a 50Ω noninductive load.

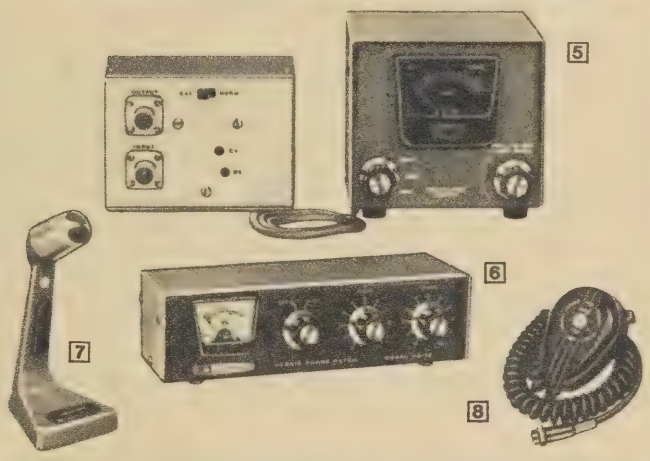
4 "Cantenna" dummy load helps check your rig

1 kW max. input; 1.5-300 MHz w/SWR 1.5:1 or less. Oil not incl.
Kit HN-31, Shpg. wt. 3 lbs. **16.95**

Useful Books for your Ham library

U.S. Callbook. EDP-126 ..... **14.95**
DX Callbook. EDP-127 ..... **13.95**
Amateur Tests and Measurements. EDP-119 ..... **5.50**
91 Dipole and Long-Wire Antennas — data for 73 different antennas. **EDP-180** **4.95**
73 Vertical, Beam and Triangle Antennas. EDP-181 ..... **5.50**
ARRL Antenna Handbook. EDP-182 ..... **4.00**
Radio Handbook. Offers comprehensive coverage of radio theory and operation. **EDP-117** **19.50**

Our most popular station accessories
Acclaimed by Hams the world over!



5 Heathkit Wattmeter/SWR Bridge

SWR bridge with adjustable sensitivity. Remote detector permits placement of meter in any location. Cable supplied.
Kit HM-102, Shpg. wt. 4 lbs. **39.95**

HM-102 SPECIFICATIONS
Frequency Range: 1.8 to 30 MHz. Wattmeter Accuracy: ±10% of full-scale reading. Power Capability: 10 to 2000 watts. Impedance: 50 ohm nominal. Connectors: UHF type SO-239. Dimensions: 5¼6" H x 2¼" W x 6½" D.

6 Heathkit hybrid Phone Patch

Individual Rcvr-line and line-Xmtr gain controls; VU meter. 30 dB isolation. Matches 3-16 ohm speakers & hi-Z or 600 ohm inputs. VOX or PTT operation. 2⅝" H x 9¼" W x 3⅝" D.
Kit HD-15, Shpg. wt. 3 lbs. **39.95**

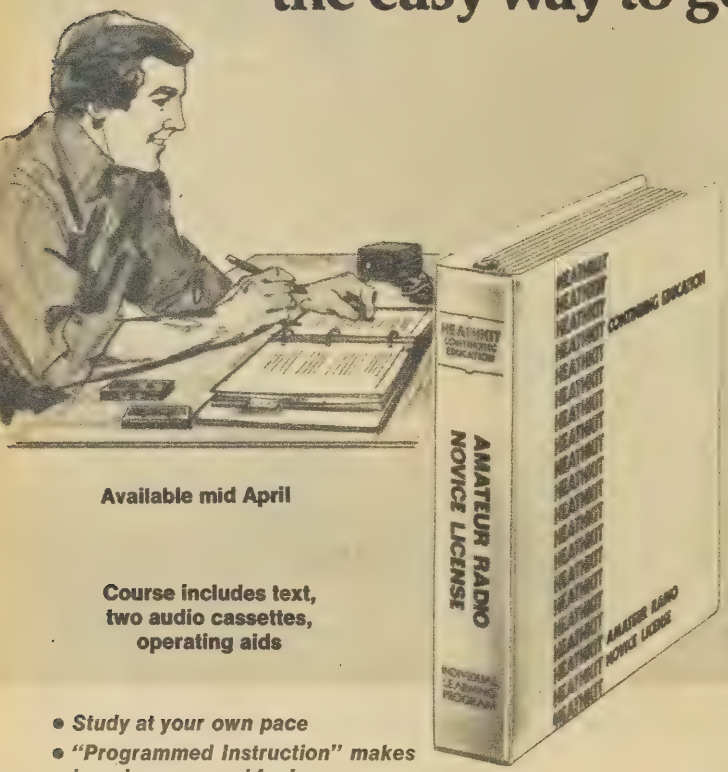
7 Fully assembled Heathkit Desk Mike

Hi-Z dynamic; grip-to-talk. For convenient VOX or PTT operation with base station transceivers. With cables.
HDP-121, Shpg. wt. 4 lbs. **44.95**

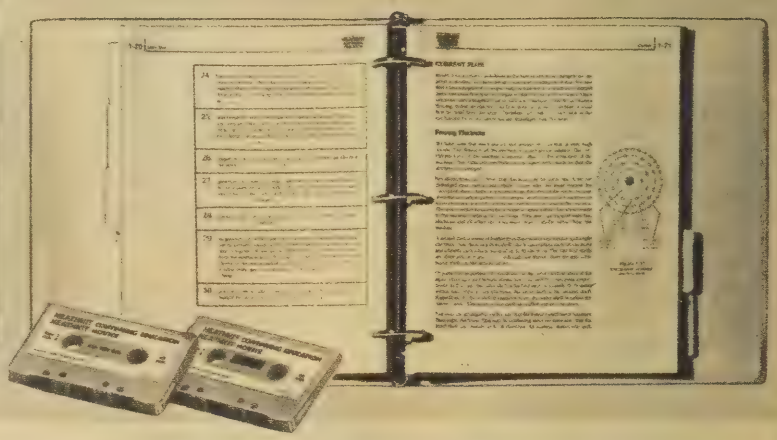
8 Fully assembled Heathkit Mobile PTT Mike

Rugged, hi-Z ceramic mike ideal for mobile work. With cable, less connector.
GH-12A, Shpg. wt. 1 lb. **12.95**

NEW–Amateur Radio Novice Learn-at-home Course–the easy way to get your Ham license!



What better way to learn about Amateur Radio than from the experts at Heath? This effective, programmed learning course is GUARANTEED to help you get your Novice ticket! In fact, we're so confident it's effective that if you fail to pass your FCC exam after completing this course — we'll REFUND your money for the course material!



Available mid April

Course includes text, two audio cassettes, operating aids

- ***Study at your own pace***
- ***"Programmed Instruction" makes learning easy and fun!***

Now — for CB'ers, electronic hobbyists, anyone interested in operating world-wide two-way Amateur radio equipment — Heath makes it easier than ever! This deluxe learn-at-home course prepares you for the Amateur Radio Novice FCC exam, and provides you with helpful guidelines for setting up and operating your own station once you pass the exam. The course includes a programmed learning text, two audio cassettes to reinforce text material and provide Code practice, helpful aids for operating your station. See page 95 for complete details and a breakdown of course subjects! Best of all, once you pass the FCC exam and get your Novice ticket, you'll qualify for the Heathkit bonus gift certificate below.

Course ER-3701, Shpg. wt. 6 lbs. **24.95**

ECP-3800 Cassette Recorder/Player. See page 95 for details.
Shpg. wt. 6 lbs. **49.95**

Heathkit HD-1416 Code Practice Oscillator

The FUN way to practice code — it's an easy-to-build starter kit too



$12.95

Fun to build and use — and recommended for ER-3701 Amateur radio course at left! Most components mount on a single circuit board for easy assembly. The unit operates from a single inexpensive 9-volt transistor battery (not supplied) and comes complete with telegraph key and phone jack. Has built-in speaker, volume and adjustable internal tone control. Once you get your license, the HD-1416 can serve as a side tone oscillator for any transmitter using grid block keying. Plastic cabinet matches Heathkit "SB" series.

Kit HD-1416, Shpg. wt. 2 lbs. **12.95**

HD-1416 SPECIFICATIONS: **Mode of Operation:** Speaker or headphones. **Tone Frequency:** 200-800 Hz adjustable. **Battery Required:** 9-volt transistor battery equivalent Neda #1604 (not supplied). **Headphones:** 8-2000 ohms. **Sidetone Oscillator:** Grid block keying transmitters (400 volts DC, negative maximum). **Dimensions:** 2⅝" H x 4⅛" W x 4⅜" D.

SAVE $4.95 when you buy our Course and Code Practice Oscillator together!



The ideal combination — study the course and get "hands-on" Code Practice

Here's the outfit that will have you operating fast and easy. The HD-1416, described at right, is a fine little unit you'll appreciate even after you have your license; and our course is the fast, easy way to get your license.

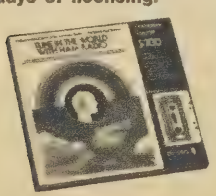
ERS-3701, Shpg. wt. 8 lbs. **32.95**

only $32.95

$37.90 if purchased separately

BONUS GIFT CERTIFICATE

Get 10% off (up to $10.00) on any Heathkit Amateur Radio equipment. Simply attach copy of license and proof of ER-3701 purchase within 90 days of licensing.



"TUNE IN THE WORLD WITH HAM RADIO"

Designed to prepare you for your Novice License. Includes a tape cassette with code speeds of up to five words per minute for easy practice, and an informative booklet with details on setting up a station, equipment, exams, etc. Produced by the ARRL, the official Amateur Radio organization.

HDP-1142, Shpg. wt. 2 lbs. **7.00**

Ameco Junior Code Course. LP record with 10 lessons from start to 8 words per minute. The course prepares you for Novice and Technician Code examinations with an FCC-type code exam, a code instruction booklet, and charts for recording accuracy.

HDP-232, Shpg. wt. 2 lbs. **3.95**

Ameco Senior Code Course. Contains everything above, plus twelve additional lessons to bring your code speed to 18 WPM. Prepares you for Amateur Novice, Technician, General and Conditional Code exams, as well as Commercial Second Class Telegraph Code exams.

HDP-332, Shpg. wt. 2 lbs. **7.50**

Ameco Junior Cassette Code Course. As above, cassette instead of LP.

HDP-432, Shpg. wt. 1 lb. **4.95**

Ameco Senior Cassette Code Course. As above, cassettes instead of LP's.

HDP-532, Shpg. wt. 1 lb. **8.95**

"By the Word" Code Course. A fast, simple and effective way to learn Code! Three LP records teach speed and comprehension using the famous "by the word" method.

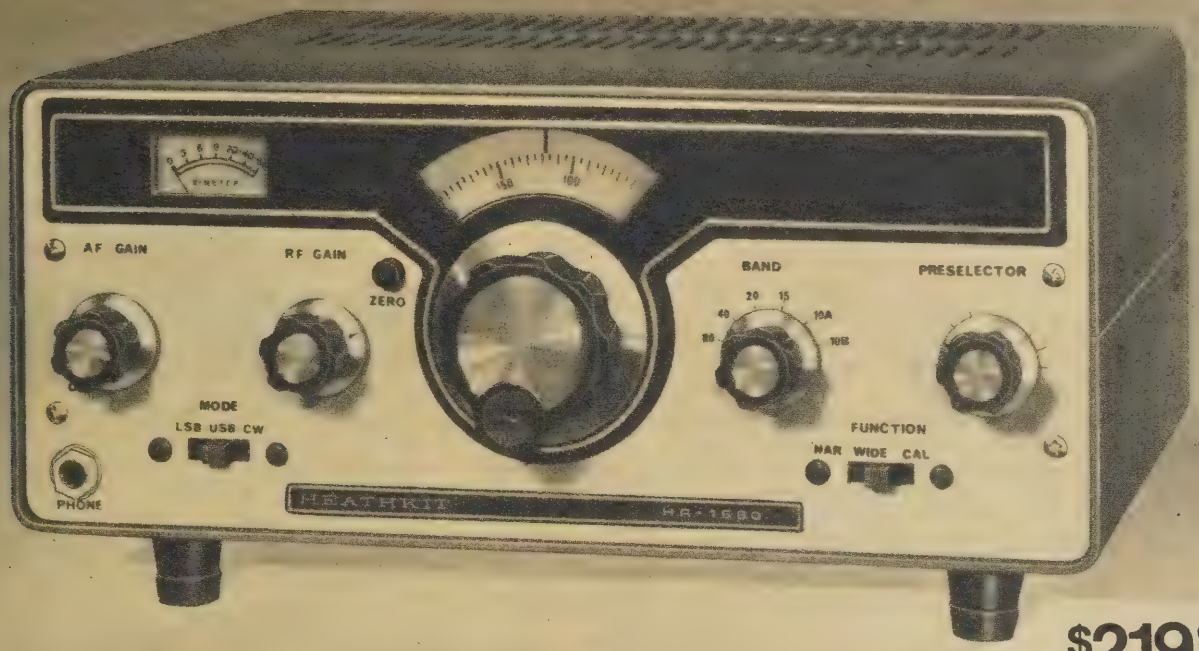
HDP-32, Shpg. wt. 2 lbs. **9.95**

Same course as above, but on two cassettes instead of LP records.

HDP-132, Shpg. wt. 1 lb. **9.95**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Here's an SSB/CW Receiver with EVERYTHING!



$219.95

HR-1680 High-performance solid-state SSB/CW Receiver

HR-1680 SPECIFICATIONS

Frequency Coverage (MHz): 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-28.5, 28.5-29.0. **Sensitivity:** Less than 0.5 μV for 10 dB S + N/N for SSB operation. **IF Selectivity:** 2.1 kHz minimum at 6 dB down, 7 kHz maximum at 60 dB down. **Overall Audio Response:** Wide; 2100 Hz minimum at 6 dB down, 7 kHz maximum at 60 dB down. Narrow; 250 Hz minimum at 6 dB down, 2.5 kHz maximum at 60 dB down (center frequency approx. 750 Hz). **Overall Gain:** Less than 1.5 μV input for 0.25 watts audio output. **Audio Output Power:** 1.2 watts into a 4-ohm load at less than 10% THD. **AGC Characteristic:** Blocking level, 3 volts. Dynamic range, 120 dB. Time Constant, attack time less than 1 mS. Release time switch selectable at 100 μS (CW) or 1 second (SSB). **Intermodulation Distortion:** −60 dB. **Image Rejection:** 50 dB or better. **IF Rejection:** 60 dB or better. **Internally Generated Spurious Signals:** Below 1 μV equivalent antenna input except at 3.74, 21.2, 28.6 and 28.9 MHz. **Frequency Stability:** Less than 100 Hz per hour drift after 30 minutes warmup. Less than 100 Hz drift for 10% change in line voltage. **Tuning Rate:** Approx. 15 kHz per turn. **Dial Accuracy:** Within 2 kHz after calibration at nearest 100 kHz marker. **Muting:** Shorted external ground at mute socket. **Sidetone Input Level:** 10 mV or greater (300 mV maximum). **Dial Backlash:** 50 Hz or less. **IF Frequencies:** First IF, 8.395-8.895 MHz; Second IF 3.395 MHz. **Antenna Input Impedance:** 50 ohms unbalanced. **Temperature Range:** −10°C to +50°C. **Meter Calibration:** 0 to S-9 + 60 dB. **Power Requirement:** 120 or 240 volts AC (60/50 Hz) 27 watts maximum or 11.5 VDC to 15 VDC at 0.75 amperes maximum. **Dimensions:** 12¾" W x 6¾" H x 12" D. **Net Weight:** 9¾ lbs.

An outstanding addition to ANY Station — listen to Amateur Radio voice and code broadcasts from all over the world!

- ***Easy kit assembly, easy NO-INSTRUMENT ALIGNMENT***
- ***Built-in AC power supply, or external battery operation***
- ***Excellent sensitivity lets you work weak signals***
- ***Stable operation for drift-free SSB and CW reception***
- ***Extra-large spinner for really easy tuning***
- ***Headphone jack for working stations in private***

Listen to world-wide SSB and CW with the HR-1680. This high-performance, low-cost Amateur radio receiver covers 500 kHz segments of the 80, 40, 20 and 15-meter Amateur bands plus two 500 kHz segments for the lower 1 MHz of 10 meters. Its advanced solid-state circuit and convenience features make it ideal for Novice, General or Extra-Class operators.

The superhet double-conversion receiver features a double-tuned RF stage to provide maximum signal on each band. AGC controlled IF and RF stages permit signals of varying strengths to be received without fading or blasting. A four pole crystal filter provides excellent SSB reception and a two-stage active audio filter provides a very sharp bandpass for excellent CW operations. The use of solid-state components throughout eliminate heat buildup and drift, and contributes to the HR-1680's outstanding frequency stability.

Has a front panel "S" meter to indicate relative signal strength, AF and RF gain controls, and preselector. The extra-large, easy-tune spinner and easy-to-read dial calibrated in 5 kHz increments make "right on" station selection fast and easy. Even uses the same dial readout for all four bands — simply flip the bandswitch to change bands. Has mode and function selectors, front panel headphone jack for low-impedance headphones, diode bandswitching, built-in 100 kHz crystal calibrator. The mode switch selects LSB, USB and CW with fast or slow AGC automatically engaged.

Kit construction is easy, with most parts mounted on printed circuit boards, an open chassis layout, and a wiring harness to simplify assembly. The HR-1680 can be aligned completely without external equipment. Its handsome "104 series" styling and clean functional look makes it ideal for use with Heathkit transmitters and many others. Its built-in AC power supply makes it useful in any base station operation.

Kit HR-1680, Shpg. wt. 14 lbs. **219.95**

Matching Station Speaker



Styled to match the HR-1680, with response tailored to SSB. 4 ohm impedance for use with most other gear too. Includes cable and plug.

Kit HS-1661, Shpg. wt. 5 lbs. **22.95**



Heathkit HP-13B Mobile Power Supply

Supplies all the necessary operating voltages for mobile use of SSB transceivers — high, low and fixed bias voltages, also switches filament voltage for equipment with which it is used. Features relay control of all primary power, individual circuit breaker protection.

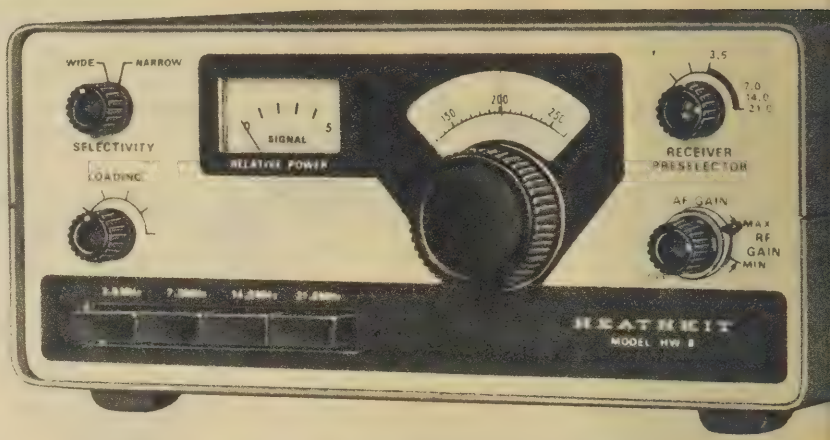
Kit HP-13B, Shpg. wt. 7 lbs. **89.95**

HP-13B SPECIFICATIONS

Input voltage: 12 to 16 VDC (neg. ground only). **Input current:** 25 amp. max. full load. **High voltage output:** 800 VDC, no load: 750 volts DC @ 250 mA. AC ripple: less than 1% @ 250 mA. **Low voltage output:** (high tap) 310 VDC, no load; 200 VDC @ 150 mA. (low tap) 265 VDC, no load; 250 VDC @ 150 mA. AC ripple: Less than .05% @ 150 mA. **Fixed bias:** −130 VDC @ 20 mA. **Dimensions:** 7¾" W x 7⅜" L x 2⅜" D. All voltages referenced at 13 VDC.

Choose Heath for the Best in Amateur Radio

Heathkit HW-8 top-performing low-cost QRP CW Transceiver $139.95



The HW-8 covers the CW (Code) portions of the eighty, forty, twenty and fifteen meter Amateur radio bands. It lets you send and receive Code signals from all over the world, and uses only a couple of watts transmit power for real fun and challenge!

Has instant pushbutton selection of any of four bands: 3.5-3.75, 7-7.25, 14-14.25 and 21-21.25 MHz. Special crystal heterodyne circuitry premixes the variable and heterodyne oscillator signals to allow easy frequency tuning from a single dial scale for all four bands. This also provides excellent frequency stability and a fixed frequency offset for all bands when you transmit.

The direct-conversion receiver boasts dramatically improved resistance to overload and reduced microphonics and hum thanks to a well-designed RF stage and a two position active audio filter. Its improved sensitivity and selectivity gives the HW-8 the finest receiver section in its price class. You get solid copy from all over with as little as 0.2 μV or less produces 10 dB S+N/N!

Features include adjustable sidetone volume, diode band switching and break-in keying with adjustable T/R delay, an RF gain control, built-in headphone jack, adjustable AF gain, preselector and tune controls. A front panel meter shows relative power. The HW-8 can be operated from its optional AC power supply for fixed station use, or from any 12 VDC power source.

Kit HW-8, Shpg. wt. 6 lbs. **139.95**

Kit HWA-7-1, AC Power Supply. Operates your HW-8 from standard 117 VAC house current. Shpg. wt. 3 lbs. **17.95**

HW-8 SPECIFICATIONS: **TRANSMITTER: DC Power Input:** 3.5 watts (80 M); 3.0 watts (40 M); 3.0 watts (20 M); 2.5 watts (15 M). **Frequency Control:** built-in VFO. **Output Impedance:** 50 Ω, unbalanced. **Spurious & Harmonic Levels:** −35 dB or better. **Offset Frequency:** approx. −750 Hz, fixed on all bands. **RECEIVER: Sensitivity:** 0.2 μV for readable signal; 1 μV or less for 10 dB S+N/N. **Selectivity:** wide, −750 Hz @ −6 dB narrow, −375 Hz @ −6 dB. **Audio Output Impedance:** 1000 Ω, nominal. **GENERAL: Frequency Coverage:** 3.5-3.75 (80 M); 7-7.25 (40 M); 14-14.25 (20 M); 21-21.25 MHz (15 M). **Frequency Stability:** less than 100 Hz/hour drift after 30 min. warmup. **Power Requirement:** 12-16 VDC, 90 mA, receive; 430 mA, transmit. **Dimensions:** 9¼″ x 8½″ x 4¼″. **Net Weight:** 4 lbs.

Improve your CW sending with this solid-state Electronic Code Keyer

- ***Selectable 10-35 or 10-60 wpm***
- ***Adjustable paddle travel and tension***
- ***DC or AC operation***

$59.95



Sending code's easy with the HD-1410 whether you're operating base or portable. The dot and dash paddles travel and tension are easily adjustable. When the two paddles are treated as one, the HD-1410 operates like a single-paddle keyer with dot and dash memories. Iambic operation forms most characters with reduced wrist movement. Dots and dashes are self-completing and always in proper proportion. During construction, you select the speed range you want — 10 to 35 words per minute or 10 to 60 words per minute. Operates on 120 VAC or 12 VDC. Adjustable sidetone frequency, built-in speaker, headphone jack. Styled to match our famous "SB" line.

A special weighted cabinet helps keep the HD-1410 stable to prevent sliding or fumbling. Its low-profile styling and compact size let you use it with most any rigs without blocking other knobs and controls.

Kit HD-1410, Shpg. wt. 4 lbs. **59.95**

HD-1410 SPECIFICATIONS: **Keying Output, Positive Line to Ground:** max. voltage open circuit or spikes — 300 volts. Max. current — 200 mA. **Keying Output, Negative Line to Ground:** max. voltage open circuit or spikes — 200 volts. Max. current — 10 mA. **Audio:** internal speaker or jack for optional hi-Z (at least 500 ohms) headphones. **Sidetone:** adjustable from 500 to 1000 Hz. **Internal Controls:** sidetone frequency, paddle tension, paddle travel. **Rear Panel Connections:** AC power cord, 12-volt power input, keyer out, headphones, receiver audio in, ext. key. **Power Requirement:** 120/240 VAC (±10%), 60/50 Hz, 3.5 watts or 10-14.5 VDC, negative ground, 150 mA. **Dimensions:** approx. 3″ H x 5″ W x 7½″ D. **Net Weight:** 3 lbs.

MICODER™... The ultimate in Two-Meter operating convenience and versatility!



WAS ~~$54.95~~
NOW $44.95

SAVE $10

- ***Electret condenser microphone***
- ***Compatible auto patch encoder***
- ***Self-powered — use with any high-impedance mike input — NO rewiring***

Replace your old microphone with the Heathkit Micoder — a quality electret condenser microphone and a reliable auto patch encoder in a single, compact hand-held unit. The microphone section features excellent audio characteristics with 300-3000 Hz response for clean voice transmission. The auto patch encoder generates highly accurate and stable tones for making phone calls through repeaters equipped for auto patch input. The Micoder is completely self-contained and operates on its own 9-volt battery (not supplied). With 6 ft. coiled microphone cable, hanger clip. Alignment requires a frequency counter or decoding at repeater station.

Kit HD-1982, Shpg. wt. 2 lbs. ..... **Was $54.95 — NOW 44.95**

HD-1982 SPECIFICATIONS: **Operating Voltage:** 9.0 VDC. **Current Consumption:** 12 mA. **Battery Life:** Approx. 6 months. **Microphone Type:** electret condenser. **Output Level:** 30 mV rms maximum. **Frequency Response:** 300-3000 Hz. **Output Impedance:** 10k min. **Encoder Frequency Tolerance:** ±1.5%. **Total Encoder Distortion:** less than 5% (harmonic plus IM). **Dimensions:** 3¾″ H x 2⅝″ W x 1¾″ D. **Weight:** 9 oz. (including battery).

There's built-in pride and satisfaction in every Heathkit product you buy.

Go-anywhere 2-meter Transceiver—outstanding performance and value!



HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE

Optional Auto-Patch Encoder Shown Installed

Versatile HW-2021 Handheld 2-Meter Transceiver

$179.95

1 Watt out, 5 receive and 5 transmit channels plus repeater offset

Compare features, compare specs and you'll be convinced—the HW-2021 is the best handheld 2-meter rig around. A single crystal controls both transmit and receive. The simplex/offset switch selects −600 kHz or simplex crystals (included) to give you two transmit frequencies for each crystal you buy. Or, substitute your own crystals for any two offset frequencies desired. We include a 146.94 MHz crystal with the HW-2021 to get you on the air in a hurry. Transmitter output is one watt minimum with 0.005% or better stability. FM circuitry and a separate microphone contribute to better audio.

The HW-2021 may be equipped with the optional HWA-2021-3 Auto-Patch Encoder to allow you to access telephone lines through repeaters having auto-patch input capability. Once you've accessed a telephone line, you can "pushbutton dial" any local telephone number and converse as you would with a conventional telephone. The Auto-Patch Encoder is an invaluable, low-cost option that gives your HW-2021 super versatility.

A pulse-type battery saver circuit extends battery life by about 75% in the standby/receive mode. The rechargeable battery pack operates the HW-2021 for approximately 10 hours on one charge. The battery charger recharges the batteries fully in about 16 hours. Compact and rugged, with textured black high-impact case. Weighs just 2 lbs. including batteries. Not recommended for beginning kit builders due to its compactness. Requires small 25-watt soldering iron such as Weller W-PS for construction, and VOM or VTVM for alignment. Order additional crystals at right.

Kit HW-2021, Shpg. wt. 4 lbs. **179.95**

HWA-2021-2, Carrying Case and Strap, Shpg. wt. 1 lb **12.95**

HW-2021 SPECIFICATIONS: RECEIVER — Sensitivity: 0.5 μV for 12 dB SINAD; 0.75 μV for 20 dB quieting. Squelch Threshold: .3 μV or less. Audio Output: .5 watts at less than 10% THD. Image Rejection: Greater than −45 dB. IF Frequency: 10.7 MHz. Modulation Acceptance: ±7 kHz minimum. TRANSMITTER — Power Output: 1 watt minimum. Oscillator Frequency: Approximately 15 MHz. Multiple Factor: x9. Modulation: Frequency (with limiting). GENERAL — Speaker Impedance: 8Ω. Operating Frequency Range: 143.9 to 148.3 MHz (unit will meet specifications ±1 MHz from alignment frequency within this range). Operating Temperature Range: +10° to +120° F (−120° to +47° C). Operating Voltage: 12 VDC nominal. Size (overall): 9¼" x 1⅞" x 3¼". Weight (including batteries): 2 lbs.

Crystal Certificates for HW-2021

Crystals designed to exacting Heath standards assure optimum performance from your HW-2021. A certificate will be sent to you postpaid. You specify frequency, mail the certificate to the manufacturer and get the crystals postpaid by return mail.

HWA-2021-4 ..... **6.95**

Auto-Patch Encoder

Places telephone calls through repeaters with auto-patch input—can even be used for repeater control. 12 digit keyboard with LED keying light and 2-sided epoxy board. Designed for HW-2021 but can be used in other rigs with high impedance inputs.

Kit HWA-2021-3, Shpg. wt. 1 lb. **34.95**



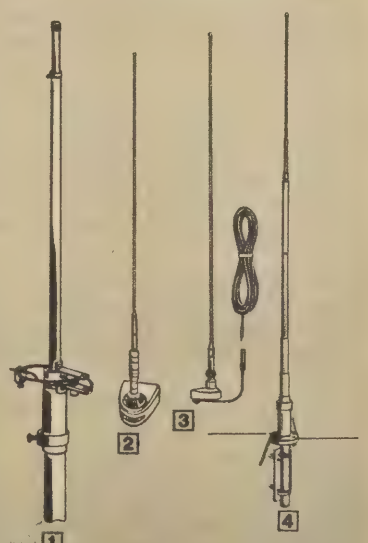
2-Meter Amplifier boosts the power of your handheld

For anyone who wants extra output at low cost, the HA-201 delivers up to 10 watts for a 1½ watt input, 8 watts for a 1 watt input—ideal for use with the HW-2021 above. Features fully automatic operation, solid-state transmit/receive switching, tuned input and output for maximum efficiency and reduced spurious emissions. *Withstands infinite VSWR load without failure.* Includes dummy load and RF detector. Easy 1 to 2 hour assembly. VTVM needed for tuneup. Operates from 12-16 VDC.

Kit HA-201, Shpg. wt. 2 lbs. **29.95**

Quality base and mobile 2-Meter Antennas

Improve your 2-meter performance with one of these quality antennas



1 Standard gain fixed. Omnidirectional. 3.75 dB gain, 1.1:1 SWR, 135-175 MHz, 100 watts. 52 ohm feed with PL-259. Mounts to 1¼" masts. Less coax. Preassembled.

HWA-202-11, 2 lbs. ... **19.95**

2 Standard gain mobile. ⅝" wavelength rear deck whip. 3.4 dB gain, 1.1:1 SWR. 100 watts, 47" radiator. 17' coax, connectors.

HWA-202-3, 2 lbs. **21.95**

3 Super gain mobile. Phased ¼ and ⅝ wave radiators. 5.2 dB gain. 200 watts; 6 MHz bandwidth; 1.1:1 SWR. Height 85". 17' RG-58-U coax, connectors.

HWA-202-9, 3 lbs. **39.95**

4 Super gain fixed. 6 dB gain. 140-150 MHz. 6 MHz bandwidth. 1.2:1 SWR. 1000 watts. SO-239 connector. 117" long. 4 radials; 21" alum. rod. For 1¾" mast. Less coax.

HWA-202-10, 7 lbs. **59.95**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

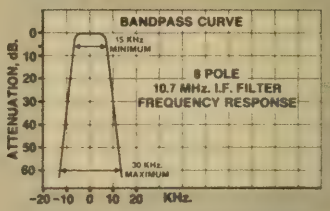
Frequency Synthesized 2-Meter Transceiver



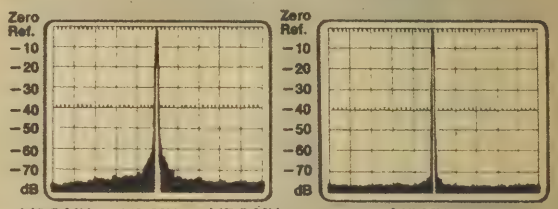
Shown with optional Micoder™ installed

The new Heathkit HW-2036 sets a value standard for synthesized 2-meter transceivers!

$289.95 with standard microphone



An 8-pole IF crystal filter greatly reduces adjacent channel interference.



Actual spectrum analyzer photos of the HW-2036 transmitter output operating at 147 MHz. Spurs within 20 MHz of carrier are down a full 70 dB!

HW-2036 2-meter Transceiver with Frequency Synthesis and Built-in tone encoder

This is the new 2-meter transceiver you have been waiting for — combines state-of-the-art technology with operating ease, convenience and versatility in an easy to build kit that's priced at about HALF THE COST of other comparable synthesized transceivers! Compare the HW-2036's performance and specifications with any 2-meter transceiver at any price — and you'll be convinced!

The HW-2036 offers true digital frequency synthesis for real operating versatility. No extra crystals are needed, there are no channel limitations. Advanced digital technology uses a voltage-controlled oscillator (VCO) and a 10 MHz crystal time base. You control the frequency of the VCO with the front panel lever switches for fast, easy and precise frequency selection.

The front-panel lever switches select any frequency in any 2 MHz segment of the 143.5 to 148.5 MHz operating range. You select the last four digits, three with the lever switches which display the frequency directly, and the last with a 0/5 kHz miniature toggle switch. These lever switches are easier to use than conventional thumbwheels and the 5 kHz steps mean that ALL 2-meter frequencies in the band are available to you. And if you inadvertently dial up an out-of-band frequency, the transmitter will not key. Has LED status lights to warn that frequency synthesizer is not locked and indicate whether channel is in use.

The built-in continuous tone encoder, with three tones selectable on the front panel, lets you access most repeaters with the HW-2036. If you order the HW-2036 with Heathkit Micoder, you'll even be able to make telephone calls through repeaters equipped with auto-patch input. Has built-in simplex, + and − 600 kHz offsets, and an Aux. position that lets you add your own crystal for any other offset frequency you may want.

The HW-2036 puts out a minimum 10 watts. For even more output, you can use the HA-202 2-meter amplifier (see next page). Even operating continuously into an infinite VSWR will not damage the HW-2036. The transmitter output is extremely clean, with spurious output better than 70 dB below carrier (see spectrum analyzer photos above). True FM circuitry means you transmit and receive with outstanding audio quality, too.



Order your HW-2036 with the Heathkit Micoder combination microphone, auto patch encoder and make telephone calls through repeaters equipped with auto patch input. See page 58 for complete description.

Receiver sensitivity is an excellent 0.5 μV for 12 dB Sinad. An 8-pole IF crystal filter provides an ideally shaped receiver bandpass for outstanding adjacent channel rejection, and the HW-2036's excellent selectivity makes it ideal for use in crowded signal areas.

Has a Schmitt-Trigger squelch with a threshold of 0.3 μV or less, diode-protected dual-gate MOS FET's in the front end, IC IF and dual-conversion receiver. A big, built-in 2x6″ speaker provides excellent audio quality and there's a jack for an external speaker.

The HW-2036 is extremely compact for easy mounting in car or boat, and its convenient gimbal-mount (supplied) lets you remove it easily for storage or security. You can also use it as a fixed station transceiver with the HWA-2036-3 AC power supply, next page. Kit building is easy too, with just five printed circuit boards and a wiring harness. A built-in signal source lets you align the HW-2036's receiver section for maximum sensitivity using just the front panel meter (no signal generator is required). Total alignment requires a VTVM. A frequency counter with a range to 150 MHz is also recommended, but not necessary. You can order the HW-2036 with a standard PTT mike, or, for even greater convenience, add $30 and get our reg. $44.95 Micoder mike/auto patch encoder. We think the HW-2036 is one of the best 2-meter transceivers you can buy anywhere, add it to your operating equipment today.

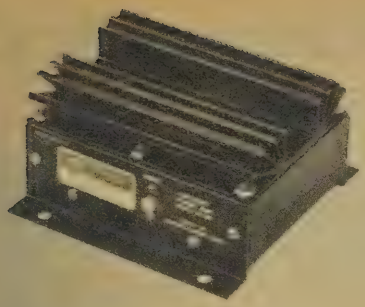
Kit HW-2036-1, HW-2036 Transceiver with reg. $44.95 Heathkit Micoder microphone/auto patch encoder. Shpg. wt. 11 lbs. **319.95**

Kit HW-2036-2, HW-2036 Transceiver with standard push-to-talk microphone. Shpg. wt. 11 lbs. **289.95**

HW-2036 SPECIFICATIONS: Receiver: Sensitivity: 0.5 μV for 12 dB SINAD (or 15 dB of Quieting). **Squelch Threshold:** 0.3 μV or less. **Audio Output:** 1.5 watts at 10% T.H.D. typically 2 watts. (5 kHz deviation). **Image Rejection:** −45 dB or greater. **Spurious Rejection:** −50 dB or greater. **IF Rejection:** −80 dB or greater. **Internally Generated Spurious:** Below 1 μV equivalent. **Bandwidth:** 6 dB at 15 kHz min. and 60 dB at 30 kHz max. **Modulation Acceptance:** 7.5 kHz, min. **Transmitter: Power Output:** 10 watts min. at 25°C and 13.8 VDC, into a 50 Ω load. **Harmonic & Spurious Output:** −70 dB within 20 MHz of carrier; −50 dB elsewhere, −40 dB harmonics. **Modulation:** FM, 0 to 7.5 kHz, adjustable. **Duty Cycle:** 100% with infinite VSWR. **Tone Encoder:** 3 tones, 70 to 200 Hz, approx. ±700 Hz deviation. **Transmitter Offset:** 0 (simplex), −600 kHz, +600 kHz with crystals supplied. Provision for one additional offset crystal. **General: Frequency Coverage:** Any 2 MHz segment from 143.5 to 148.5 MHz. (Both receiver and transmitter must be aligned for the same 2 MHz segment.) **Frequency Increments:** 5 kHz. **Frequency Stability:** ±.0015%. **Operating Temperature Range:** 15° to 125° F. (−10° to 50° C). **Operating Voltage Range:** 12.6 to 16 VDC (13.8 VDC nominal). **Current Consumption:** RX: 700 mA max. squelched. TX: 2.6 A max. at 13.8 volts. **Dimensions:** 2¾″ high x 8¼″ wide x 9⅞″ deep. **Weight:** 6.25 lbs.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Value priced 2-meter Transceiver



40W 2-meter amplifier for HW-2036 and HW-202

Delivers solid 40W minimum for 10 watts in. Draws just 7A max. from your car battery. Has antenna changeover relay and sensing circuitry for completely automatic T/R switching, tuned input/output circuits provide low spurious radiation and allow coverage of any 1.5 MHz portion of the band. Special emitter ballasted configuration—withstands VSWR's of up to 3:1. Covers any 1.5 MHz portion of the 143-149 MHz band. Final alignment requires VTVM, wattmeter or SWR bridge. Mounts just about anywhere.

Kit HA-202, Shpg. wt. 4 lbs. **64.95**

HA-202 SPECIFICATIONS: **Power Output:** 20W @ 5W in. 30W @ 7.5W in. 40W @ 10W in. 50W @ 15W in. **Impedance:** 50 ohms nom. **Power Requirement:** 12-16 VDC, 7 A max. **Dimensions:** 3″ H x 4¼″ W x 5½″ D.



AC Power Supply for HW-2036 and HW-202

The 2036-3 supplies the necessary voltage and current to power your HW-2036 or HW-202 2-meter transceivers from a standard AC outlet for base station operation. Delivers 13.8 VDC (adjustable internally from approx. 10 to 15 VDC) at 2.7 amps with better than 1.0% regulation. Has 120/240 VAC wiring options, fused overload protection. With all cables for easy hookup and 3-wire line cord. Compact metal case sets up easily just about anywhere.

Kit HWA-2036-3, Shpg. wt. 7 lbs. . . **34.95**

HWA-2036-3 SPECIFICATIONS: **Output Voltage:** 13.8 VDC regulated (Adjustable internally from approx. 10 to 15 VDC). **Output Current:** 2.7 amps, intermittent, 20 minutes max. (1.8 amps continuous). **Regulation:** better than 1% from no load to full load. **Ripple:** better than 0.1% at 2.7 amps. **Transistor, IC and Diode Complement:** one 2N3055 Pass Transistor, one MPSU05 Driver Transistor, four IN4002 silicon diodes, one IN2071 silicon diode, one UA78GMT3C IC voltage regulator. **Power Requirements:** 110 to 130 VAC or 220 to 260 VAC, 60/50 Hz @ 80 watts full load. **Dimensions:** 3″ H x 7¼″ W x 10″ D (including switch and feet). **Net Weight:** 5 lbs.

The industry standard!

HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE



Optional Tone Burst Encoder shown installed

$189.95

Heathkit HW-202 — proven performance and outstanding value

Our HW-202 2-meter transceiver has become an industry standard with a reputation for excellent audio quality. And for the money, we don't think there's a better rig around. Just compare features and specifications.

Operates on any 2 MHz segment of the 143.9 to 148.3 MHz range with independent selection of 6 transmit and 6 receive channels. And all 12 crystals can be netted for optimum performance. The transmitter delivers a solid 10 watts minimum and will operate into an infinite VSWR without failure. Standard narrow band deviation adjustable up to 7.5 kHz with instant limiting.

And the receiver is hot: 0.5 μV signal provides 15 dB of quieting... squelch threshold is 0.3 μV or less. Audio output to the built-in speaker is typically 2 watts at less than 3% harmonic distortion. Diode-protected dual gate MOSFETS in the front end... IC IF that limits at less than 10 μV... dual conversion... monolithic 4-pole 10.7 MHz crystal filter... built-in hash filter/voltage regulator to keep ignition noise out and maintain constant input voltage despite changing car system demand. Kit includes a set of crystals for 146.94 MHz to aid in tune-up and get you on the air quickly... cable for 12 V hook-up to HWA-2036-3 supply ... heavy-duty alligator clips for use in a temporary installation... antenna coax jack... gimbal mounting bracket and a quick-release mobile mount so you can store it in the trunk when you leave the car. Get on 2 with maximum versatility and lowest cost with the HW-202. And check out the full line of accessories.

Kit HW-202, Shpg. wt. 10 lbs. **189.95**

HW-202 SPECIFICATIONS: **RECEIVER — Sensitivity:** 12 dB SINAD* (or 15 dB of quieting) at 0.5 μV or less. **Squelch threshold:** 0.3 μV or less. **Audio output:** 3 W at less than 10% total harmonic distortion (THD). **Operating frequency stability:** Better than ±.0015%. **Image rejection:** Greater than 45 dB. **Spurious rejection:** Greater than 60 dB. **IF rejection:** Greater than 80 dB. **First IF frequency:** 10.7 MHz ±2 kHz. **Second IF frequency:** 455 kHz (adjustable). **Receiver bandwidth:** 22 kHz nominal. **De-emphasis:** −6 dB per octave from 300 to 3000 Hz nominal. **Modulation acceptance:** 7.5 kHz minimum. **TRANSMITTER — Power output:** 10 watts minimum. **Spurious output:** Below −45 dB from carrier. **Stability:** Better than ±.0015%. **Oscillator frequency:** 6 MHz, approximately. **Multiplier factor:** X24. **Modulation:** Phase, adjustable 0-7.5 kHz, with instantaneous limiting. **Duty cycle:** 100%. **High VSWR shutdown:** None. **GENERAL — Speaker impedance:** 4 ohms. **Operating frequency range:** 143.9 to 148.3 MHz (will meet specifications ±1 MHz of alignment frequency within this range). **Current consumption:** Receiver (squelched): Less than 200 mA. Transmitter: Less than 2.2 amperes. **Operating temperature range:** −12° to 122°F (−25° to +50°C). **Operating voltage range:** 12.6 to 16.0 VDC (13.8 VDC nominal). **Dimensions:** 2.75″ H x 7.2″ W x 9.875″ D, excluding mount.

*SINAD = $\frac{\text{Signal + noise + distortion}}{\text{Noise + distortion}}$

Optional Tone Burst Encoder to access repeaters



Add repeater versatility to your HW-202 **$29.95**

Accesses most closed repeaters for repeater association members, to give your 2-M rig more range and versatility. The four tone select buttons can be pre-set between 1800 Hz and 2500 Hz with bursts adjustable from 0.25 second to continuous. Frequency stability is ±1% from −30 to +50°C. Placing all buttons in "out" position removes encoder from circuit. All components mount on single circuit board which mounts behind the HW-202's removable bezel.

Kit HWA-202-2, Shpg. wt. 1 lb. **29.95**

HW-202 Crystal Certificates

We send certificates to you postpaid. You mail the certificate to the manufacturer and receive the crystals postpaid by return mail.

HWA-202-6, one Transmit Crystal Certificate, postpaid **5.95**

HWA-202-7, one Receive Crystal Certificate, postpaid **5.95**

Heathkit 104 series SSB Transceivers...

Completely broadbanded — Instant QSY — no preset, load or tune controls!



Heathkit SB-104 Amateur Transceiver

Totally broadbanded, completely solid-state, with true digital frequency readout and much more. Operates USB, LSB or CW — you can go from CW on the low end of 80 to USB on the high end of 10 in seconds — and with perfect tune! Just choose the band, select mode and go; no more preselector, loading or tuning controls. True digital readout with 6 electronic digits provides resolution down to 100 Hz on all bands. Digital circuitry takes into account all three frequencies: VFO, HFO and BFO — you don't even need a calibrator.

Transmitter delivers 100 watts output; or QRP'ers can flick the switch for instant 1-watt output. The four final transistors are protected against high SWR and thermal runaway. Puts out a clear, strong signal with low harmonic and spurious radiation, third-order distortion down 30 dB or better. Has 15 MHz WWV position on the bandswitch, tune button for loading linears, PTT mike jack, pushbutton 100 Hz blanking. ALC/relative power/S-meter, switchable VOX with gain and delay, and more. You can even build in a lighted display of your call letters! Two wiring harnesses eliminate most point-to-point wiring. Alignment requires only a dummy load, mike and VTVM. Operates from 12V auto electrical system. For fixed station, hook up the HP-1144 Power Supply (below).

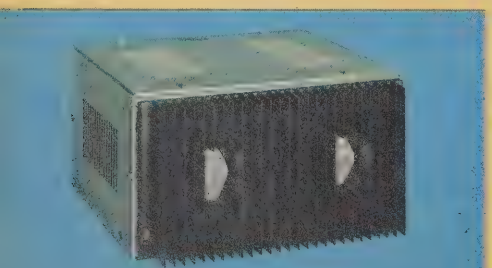
Kit SB-104, Shpg. wt. 32 lbs. **699.95**
Kit SBA-104-1, Noise blanker, Shpg. wt. 1 lb. **29.95**
Kit SBA-104-2, Mobile mount, Shpg. wt. 5 lbs. **39.95**
Kit SBA-104-3, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **42.95**

Station Speaker. Designed to match the SB-104 Transceiver. Cabinet is large enough to house the HP-1144 AC Power Supply, too. 5″ x 7″ oval speaker (3.2 ohm with 3.16-oz. magnet) is response-tailored for SSB. Frequency response: 300-3000 Hz. Connector plug and cable are included. Dimensions: 7⅛″ H x 10⅛″ W x 14″ D.

Kit SB-604, Shpg. wt. 8 lbs. **37.95**

SB-104 SPECIFICATIONS

Frequency Coverage: 3.5 MHz through 29.7 MHz amateur bands, 15 MHz WWV receive only. **Frequency Stability:** Less than 100 Hz/hr drift after 30-min. warm-up; less than 100 Hz drift for ±10% change in primary voltage. **Readout Accuracy:** Within ±200 Hz ±1 count. **Dial Backlash:** 50 Hz max. **Phone Patch Impedance:** 4 ohm output to speaker; high impedance to transmitter. **TRANSMITTER — RF Power Output: High Power** (50-ohm non-reactive load). **SSB:** 100 watts PEP ±1 dB; **CW:** 100 watts ±1 dB. **Low Power SSB:** 1 watt PEP (minimum); **CW:** 1 watt (min.). **Output Impedance:** 50 ohms, less than 2:1 SWR. **Carrier Suppression and Unwanted Sideband Suppression:** −50 dB down from 100 watt single-tone output at 1000 Hz reference. **Harmonic Radiation:** 40 dB below 100 watt output. **Spurious Radiation:** −40 dB within ±4 MHz of carrier; −60 dB farther than ±4 MHz. **Microphone Input:** High impedance, −45 to −55 dB; approx. 22k ohms. **RECEIVER — Sensitivity:** 1 μV for 10 dB S+N/N for SSB. **Selectivity:** 2.1 kHz minimum at −6 dB, 5 kHz max. at −60 dB. (2:1 nominal shape factor). **CW Selectivity:** (with accessory CW filter) 400 Hz at −6 dB, 2 kHz max. at −60 dB. **Audio Output:** 2.5 watts into 4 ohms, 1.25 watts into 8 ohms, less than 10% THD. 4-8 ohm headphones. **AGC:** Less than 1 millisecond attack time; switch selectable 100 msec and 1 sec. release, and OFF. **IM Distortion:** −65 dB min.; −57 dB typ. with noise blanker. **Image Rejection:** −60 dB min. **Dimensions:** 5¾″ H x 14 15/32″ W x 13⅞″ D.



Fixed Station Power Supply

120 or 240 VAC operated supply provides 13.8 VDC required by SB-104 Transceiver. Full-wave bridge circuit has triple Darlington regulation with an IC which samples at the transceiver, compares and automatically maintains a fixed voltage — almost no change in voltage from no load to full load. Mounts inside SB-604 speaker cabinet.

Kit HP-1144, Shpg. wt. 27 lbs. **99.95**

HP-1144 SPECIFICATIONS

Output Voltage: 13.8 VDC regulated (adjustable from approximately 11 to 16 VDC). **Maximum Output Current:** 20 amperes, intermittent. 8 amps continuous. **Power Requirement:** 110 to 130 VAC @ 6A or 220 to 260 VAC @ 3A, 50/60 Hz maximum. **Regulation:** Less than 2% output voltage variation from no load to 20 amperes. **Ripple:** Less than 1% at 20 amperes. **Fuses:** 7-amp, 3AG, slow-blow primary. 20-amp, 3AG, output. **Dimensions:** 5½″ H x 9¼″ W x 10¼″ D. **Net Weight:** 23 lbs.

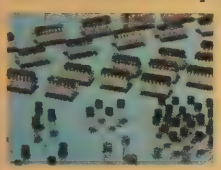
Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Digital or Dial, they're your BEST for the money!

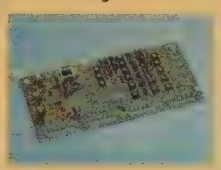
Completely solid-state design — including the finals!



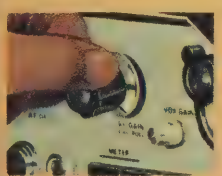
SB and HW-104 Features to please any Ham



All solid-state . . . including the finals. Output warranted for one year.



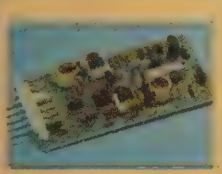
Completely broadbanded. No tuning from 80-10 meters . . . instant QSY.



Built-in 100 kHz & 25 kHz calibrator. Keeps your dial scale accurate to 2 kHz.



Circuit board construction. 7 major boards can extend for adjustment.



Optional noise blanker for up to 50 dB effective blanking.



Complete back-panel connections. Full access in & out.

Heathkit HW-104 SSB 5-Band Transceiver — now more hams than ever can afford broadband design

Instant QSY! Choose the band, frequency and mode (USB, LSB or CW) and it stays tuned — without preselector, load or tuning controls. Delivers a clean signal at 100 watts, or in the 1-watt low-power position. At 100 watts, third order distortion is down 30 dB, carrier and unwanted sideband suppression down 55 dB. Reception is super clear, thanks to the broadband design that minimizes cross-modulation and intermodulation. Sensitivity is less than 1 μV. Has a 4-pole crystal filter, CW sidetone, and VOX provision. For convenience, there's a 15 MHz WWV receive position on bandswitch and "pull-to-calibrate" position on the RF control.

The smooth action dial covers 3.5 MHz to 29.0 MHz with 15 kHz per knob revolution. The VFO is the same basic circuitry as the SB-104, with less than 100 Hz/hour drift after warmup. Want the top end of 10 meters? Just add the HWA-104-1 accessory.

Assembly is clean and precise. All you need for alignment are a dummy load, microphone and VTVM. And you can add the matching SB-614 Station Monitor and SB-634 Console (see page 66) to your HW-104 rig, too. Requires 13.8 VDC power; for fixed station use, order HP-1144 supply (described on preceding page).

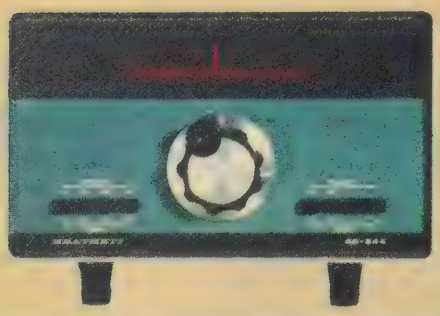
Kit HW-104, Shpg. wt. 29 lbs. **499.95**
Kit HP-1144, AC power supply, Shpg. wt. 27 lbs. **99.95**
Kit HS-1661, Matching speaker (shown above), Shpg. wt. 5 lbs. **22.95**
Kit HWA-104-1, 10-meter accessory (coverage to 29.7 MHz), Shpg. wt. 1 lb. **18.95**
SBA-104-1, Noise blanker, Shpg. wt. 1 lb. **29.95**
SBA-104-2, Mobile mount, Shpg. wt. 5 lbs. **39.95**
SBA-104-3, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **42.95**

HW-104 SPECIFICATIONS

Frequency Coverage: 3.5 MHz through 29.0 MHz — (to 29.7 MHz with optional 10M accessory). **Frequency Stability:** less than 100 Hz/hour drift after 30-min. warmup. **Dial Accuracy:** Within 2 kHz after calibration at nearest 100 kHz marker. **Tuning Backlash:** 50 Hz or less. **Phone Patch:** 4-ohm output to speaker, high impedance to transmitter. **TRANSMITTER — RF Power Output: High Power** (50-ohm nonreactive load). SSB: 100 watts ±1 dB, CW: 100 watts ±1 dB. **Low Power:** 1 watt (minimum). **Harmonic Radiation:** 40 dB below 100 watt output. **Spurious Radiation:** −40 dB within ±4 MHz of carrier, −60 dB greater than ±4 MHz from carrier. **Mike Input:** High impedance, −45 to −55 dB. **RECEIVER — Sensitivity:** 1 μV for 10 dB S+N/N for SSB. **Selectivity:** 2.1 kHz min. at 6 dB down, 7 kHz max. at 60 dB down. **Overall Gain:** Less than 1 μV for 0.5 watt output. **Audio Output:** 2.5 watts into 4 ohms, 1.25 watts into 8 ohms, at less than 10% THD. **AGC:** Less than 1 msec attack; selectable 100 μsec and 1 sec. release. **IM Distortion:** −60 dB. **Image/IF Rejection:** −60 dB. **Power Requirement:** 13.8 VDC nominal (max. 16 VDC) at: Receive, 2 amps; Transmit, low power, 3 amps; Transmit, high power, 20 amps. **Dimensions:** 5¾" H x 14$^{15}/_{32}$" W x 13⅞" D.

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Versatile Station Accessories for the 104's



SB-644 Remote VFO

Designed exclusively for use with the SB-104. Provides split transmit/receive capability without a separate transmitter and receiver. Multi-mode capability allows transceive operation on either the "644" or the "104." Use either of the two crystal positions in the "644" for fixed-frequency control. "644" tuning scale gets you into the right frequency area, exact frequency readout takes place in the "104." Switch from transmit to receive and the display automatically changes to the correct frequency. Uses the same kit VFO as the SB-104. Requires no modifications to "104."

Kit SB-644, Shpg. wt. 10 lbs. **134.95**

SB-644 SPECIFICATIONS

Frequency Coverage: 5.0—5.5 MHz allowing 80, 40, 20, 15, 10 meter operation in the SB-104. **Frequency Stability:** Less than 100 Hz drift per hour after thirty minute warmup. **Modes of Operation:** Remote VFO Main VFO; Receive Remote/Transmit Main; Receive Main/Transmit Remote; Crystal frequencies (2) (crystals not supplied). **Dial Backlash:** 100 Hz max. **Power Requirement:** 11V and 13.6V at 500 mA supplied by SB-104. **RF Output:** 0.34 to 0.4V RMS over 5 to 5.5 MHz into a 5 ohm load. **Dimensions:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 6½ lbs.



SB-614 Station Monitor

Monitors transmitted SSB, CW, & AM signals up to 1 kW from 80-6 meters. Shows nonlinearity, insufficient or excessive drive, poor carrier or sideband suppression, regeneration, parasitics and key clicks. Manual includes 40 CRT displays and explanations. Solid-state circuit, easy-to-build with a circuit board and wiring harness to simplify assembly.

Kit SB-614, Shpg. wt. 17 lbs. **169.95**

SB-614 SPECIFICATIONS

RF SAMPLING SECTION: Power Limits: Exciter input (50 —75 ohm) 10 to 300 watts; Antenna input (50 —75 ohm) 10 to 1000 watts. **Insertion Loss:** Negligible. **VERTICAL AMPLIFIER:** Input Impedance: 1 Megohm shunted by 75 pf. **Sensitivity:** 60 mV rms/¼" vertical deflection. **Attenuator:** 2-position; x1, 2 volts rms max. input; x10, 20 volts rms max. input. **HORIZONTAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 50 pf. **Sensitivity:** 50 mV rms/¼" horizontal deflection. **SWEEP GENERATION: Type:** Recurrent, automatic sync. **Frequency Range:** 10 Hz to 10 kHz in three ranges. **GENERAL: Graticule:** .250 inch squares 6 x 8 (1.5 x 2.0 inches total viewing area). **Power Requirement:** 110-130 or 220-260 VAC, 60/50 Hz. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 12 lbs.



SB-634 Five-function Console

Adds real operating versatility to your station! Provides five of the necessary station functions every amateur needs. 24-hour digital clock; ten-minute ID timer; RF wattmeter with 200 or 2000 watt full scale ranges; SWR bridge with sensitivity control; phone patch that can be used manually or with VOX control.

Kit SB-634, Shpg. wt. 13 lbs. **199.95**

SB-634 SPECIFICATIONS

CLOCK — Display: Six digits. **Time Base:** 24 hours. **TIMER — Display:** Three full digits. **Time Interval:** 10 minutes with automatic reset. Manual reset at any portion of 10-minute period. **Signal:** Visual only or both visual and aural. **RF POWER/SWR METER — Frequency Range:** 1.8 to 30 MHz. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Handling Capability:** 2000 watts (maximum). **SWR Sensitivity:** Less than 10 watts. **Impedance:** 50 ohm nominal. **Connectors:** UHF type SO-239. **PHONE PATCH — Circuit:** Telephone hybrid for VOX or manual operation. **TELEPHONE LINES — Input Impedance:** Approximately 600 ohm. **Null Depth:** At least 30 dB isolation between transmit and receive circuits. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 10 lbs.





The business end of the SB-230 — a conduction-cooled triode final and efficient heat sink. No blower needed.

SB-230 1kW Conduction- Cooled Linear

The lowest cost conduction-cooled linear on the market. Uses a husky Eimac 8873 triode in proven, stable, grounded grid circuitry to deliver up to 1200 watts PEP SSB, 1000 watts CW input from less than 100 watts drive. It's also rated at 400 watts input for slow-scan TV and RTTY. And the final is completely enclosed in a double-shielded compartment. Bandswitching is done with a single knob... Load and Tune controls are clearly marked so *you can return* to a favorite operating frequency just by noting the control positions. A five-position switch, coupled with the backlighted meter, indicates Relative Power, Plate current, Grid current and plate High Voltage at a glance. Relative Power sensitivity is adjustable with the front panel knob.

Built-in safety features include microswitch interlocks on both the top and bottom to shut down primary power when cabinet shells are removed; a temperature monitored heat sink that shuts down the unit if temperature goes too high. Built-in delay circuit allows sufficient tube warmup. An Exciter light indicates the linear is running straight through, without amplification. The On-Off switch includes a circuit breaker for the primary side of the power transformer. And the cathode of the tube is fused.

Kit SB-230, Shpg. wt. 40 lbs. **439.95**

SB-230 SPECIFICATIONS

Band Coverage: 80, 40, 20, 15 and 10 meter. **Duty Cycle: SSB:** continuous voice modulation; **CW:** continuous (max. key-down time 30 seconds); **RTTY/SSTV:** 50% (max. transmit time 10 minutes at 400 watts). **Driving Power Required:** less than 100 W. **Third Order Distortion:** —30 dB or better. **Output Impedance:** 50 ohms at 2:1 SWR max. **Input Impedance:** 52 ohms at 1.5:1 SWR max. **Zero Signal Plate Current:** 25 mA. **Power Requirement:** 120 VAC, 50/60 Hz, 14 A max. or 240 VAC, 50/60 Hz, 7 A max. **Dimensions:** 14¾" W x 16" D x 7" H. **Net Weight:** 33½ lbs.

Heathkit HW-101 Deluxe 5-Band Transceiver



HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE

Heathkit HW-101 deluxe 5-Band Transceiver gives you top performance at a low kit-form price

$349.95 ***Its price/performance ratio makes the HW-101 an exceptional value in amateur radio***

The HW-101 is a 5-band SSB/CW transceiver with the features you NEED for operating ease, convenience and versatility. Provides 180 watts input PEP, 170 watts CW. Features 0.35 μV sensitivity, a high stability FET VFO; both PTT (push-to-talk) and VOX (voice-operated transmit) operation. A crystal-controlled heterodyne oscillator assures accurate, stable operation. Triple action level control prevents overdriving the finals.

A built-in crystal calibrator lets you accurately calibrate the HW-101 at 100 kHz intervals. Smooth dial drive with 36-1 ratio and an extra-large tuning knob provide back-lash free tuning. The front panel meter shows signal strength on receive, ALC voltage on transmit, and switches to read relative power output or final amplifier cathode current.

The HW-101 is designed for long life and outstanding flexibility. Kit assembly is easy, with an open chassis layout, uncrowded circuit boards and a color-coded wiring harness. Special "Switch Boards" with built-in wafer switches help eliminate intricate switch wiring to greatly simplify assembly. Buy and build the HW-101 — join the thousands of Hams who've found you can't beat it.

Kit HW-101, Shpg. wt. 22 lbs. **349.95**

SBA-301-2, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **32.50**

HW-101 SPECIFICATIONS

RECEIVER: Sensitivity: <0.35 μV for 10 dB S+N/N for SSB operation. **SSB selectivity:** 2.1 kHz min. @ 6 dB down; 7 kHz max. @ 60 dB down (3.395 MHz filter). **CW selectivity:** (optional SBA-301-2 CW crystal filter); 400 Hz min. @ 6 dB down; 2.0 kHz max. @ 60 dB down. **Input:** Low impedance for unbalanced coaxial input. **Output impedance:** 8 ohm speaker, and high impedance headphone. **Power output:** 2 watts with <10% distortion. **Spurious response:** Image and IF rejection >50 dB. **TRANSMITTER: DC power input:** SSB 180 watt PEP (normal voice, continuous duty cycle). CW 170 watts (50% duty cycle). **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohm to 75 ohm with <2:1 SWR. **Oscillator feed-through or mixer products:** 45 dB below rated output: **Harmonic radiation:** 35 dB below rated output. **Transmit-receive operation: SSB:** PTT or VOX. **CW:** Provided by operating VOX from a keyed tone, using grid-block keying. **CW sidetone:** Internally switched to speaker or headphone in CW mode. Approx. 1000 Hz tone. **Microphone input:** High impedance with a rating of −45 to −55 dB. **Carrier suppression:** 45 dB down from single-tone output. **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB from two-tone output. **RF compression (TALC*):** >10 dB at .1 mA final grid current. **GENERAL: Frequency coverage:** 80-10 M amateur bands. **Frequency stability:** <100 hertz per hour drift after 45 minutes warmup from normal ambient conditions. <100 Hz for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial calibration:** 5 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz. **Power requirements:** 700 to 850 volts at 250 mA with 1% maximum ripple; 300 volts at 150 mA with .05% maximum ripple; −115 volts at 10 mA with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. (see fixed power supply below). Cabinet dimensions: 6 5/16" H x 14 7/16" W x 13 3/8" D.

*Triple Action Level Control.



Deluxe Heathkit HP-23B Fixed Station AC Power Supply

$62.95 ***Provides fixed station operation for the HW-101 above, also can be used with other Heathkit SSB Transceivers, many others as well***

Provides the operating voltages needed for fixed station transceiver use — high voltage, two low voltages, fixed bias, 12.6 volt filament. The improved HP-23B now features a higher voltage rating on B+ filter capacitors; improved filtering on bias voltage; fixed bias voltage, and heavier filament wires in the power cable. Now the popular Heathkit power supply is better than ever.

Kit HP-23B, Shpg. wt. 18 lbs. **62.95**

HP-23B SPECIFICATIONS

Power requirements: 120/240 VAC, 60/50 Hz, 350 watts maximum. **High voltage output:** 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple. Less than 1% @ 250 mA. **Duty cycle:** 150 mA continuous to 300 mA @ 50%. **Low voltage output:** (High tap) 350 VDC, no load; 300 VDC @ 150 mA ±10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA; ±10%. Less fhan .05% AC ripple @ 150 mA, continuous duty to 175 mA. **Fixed bias:** −130 VDC ±10%, no load; −100 VDC @ 20 mA. **Filament voltage:** 12.6 VDC @ 5.5 amps. **Dimensions:** 9" L x 4 3/4" W x 6 3/4" H.

Heathkit Linears — Packed with Power and Features



1 Heathkit SB-200 1 kW Linear Amplifier

- **Complete 80 through 10 meter band coverage**
- **Fully shielded, fan-cooled amplifier compartment**
- **Circuit-breaker power supply protection**

Delivers a full 1200 watts PEP input, 1 kW on CW. Requires only 100 watts drive, so it's ideal for use with most any popular transmitter or transceiver. And the SB-200 has the features you need for top performance.

The heavy-duty final amplifier tubes are fan-cooled for maximum tube life and completely shielded for excellent TVI protection. A pre-tuned cathode-input circuit provides maximum efficiency and low distortion. The ALC output provides automatic exciter control.

Has a built-in solid-state power supply with circuit breaker protection. The switchable front panel meter shows SWR, grid current, plate current, relative power and plate voltage. For extra operating convenience, an antenna relay automatically switches the antenna to the exciter input when the SB-200 is "off".

The sturdy yet lightweight construction of the SB-200 is achieved by using a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and isolation of components. The SB-200's clean, open chassis layout assures easy assembly.

Kit SB-200, Shpg. wt. 45 lbs. **359.95**

SB-200 SPECIFICATIONS

Band coverage: 80, 40, 20, 15 & 10 meters. **Maximum power input:** 1200 watts P.E.P. SSB, 1000 watts CW. **Driving power required:** 100 watts. **Duty cycle:** SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). **Third order distortion:** —30 db or better at 1000 watts P.E.P. **Output impedance:** 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. **Input impedance:** 52 ohm unbalanced; broad-band pretuned input circuit requires no tuning. **Meter functions:** 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. **Front panel controls:** Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. **Tube complement:** Two 572B/T-160-L (in parallel). **Power requirement:** 120 volts AC @ 16 amperes (max.), 240 volts AC @ 8 amperes (max.). **Cabinet size:** 14⅞" W x 6⅝" H x 13⅜" D. **Net weight:** 35 lbs.

2 Heathkit SB-220 2 kW Linear Amplifier

- **High-efficiency pre-tuned broadband pi-input**
- **Zener-diode regulated power supply**
- **Front-panel current and voltage meters**

The one that's making Amateur Radio history because it offers more features and performance for the price! Uses a pair of conservatively-rated Eimac 3-500Z's to deliver up to 2000 watts PEP SSB input. It can be loaded to a full 1 kW on both CW and RTTY. A broadband pre-tuned pi-input delivers maximum efficiency with low distortion over the complete 80-10 meter bands. And it requires just 100 watts drive!

Tune-up couldn't be easier! Just set the band-switch, set the CW-tune/SSB rocker switch to CW-tune position, adjust tune and load controls for maximum relative power. Push the switch back to SSB and you're "on" with up to a full 2 kW input! And you've got up to a full 1000 watts on CW or RTTY.

The power supply can be wired for 120 or 240 volts. Zener diode regulated operating bias reduces idling current for cooler running and extended tube life. There's built-in circuit breaker protection and a large, quiet-running fan. Other features include ALC to prevent overdriving, front-panel switch-selected monitoring of grid current, relative power and high voltage. Kit assembly is easy and enjoyable, too.

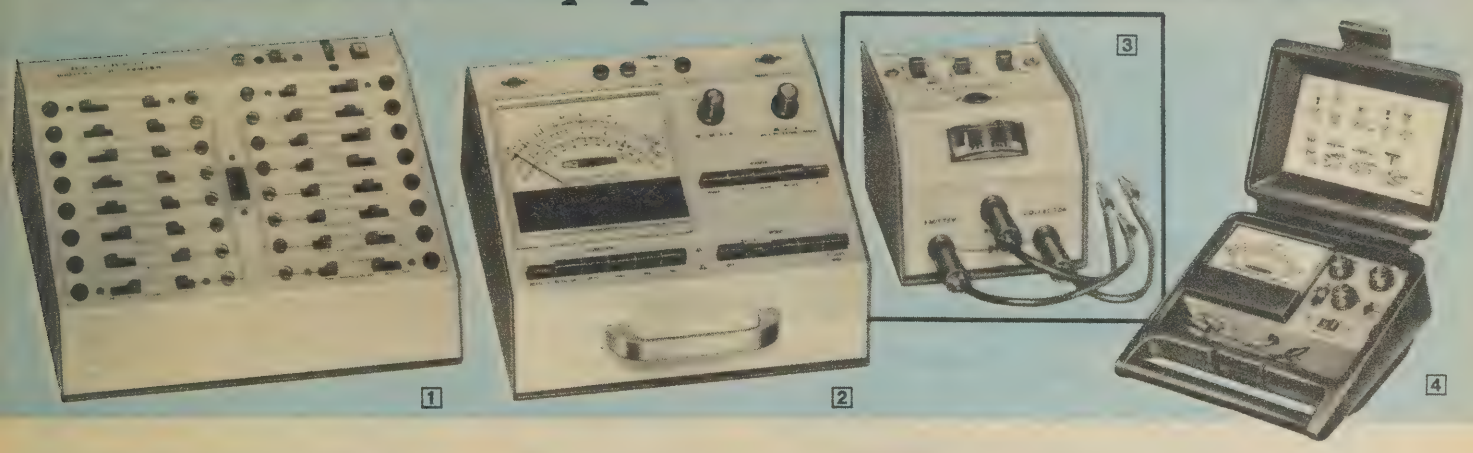
Kit SB-220, Shpg. wt. 64 lbs. **499.95**

SB-220 SPECIFICATIONS

Band coverage: 80, 40, 20, 15 and 10 meters. **Driving power:** 100 W. **Max. power input:** SSB, 2000 W. PEP; CW, 1000 W.; RTTY, 1000 W. **Duty cycle:** SSB, Continuous voice modulation. CW, Continuous (maximum key-down 10 minutes). RTTY, 50% (maximum transmit time 10 minutes). **Third order distortion:** —30 dB or better. **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity Meter Switch, Power, CW/Tune — SSB, Plate meter, Multi-meter (Grid mA, Relative Power and High Voltage). **Rear panel:** Line cord, circuit breakers (two 10 A). Antenna Relay (phono). ALC (phono). RF Input (SO-239). Ground post. RF Output (SO-239). **Tubes:** Two Eimac 3-500Z. **Power requirement:** 120 VAC, 50/60 Hz at 20 amp. max. 240 VAC, 50/60 Hz, at 10 amp. max. **Cabinet size:** 8¼" H x 14⅞" W x 14½" D.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Heathkit Test Equipment for solid-state devices



1 Heathkit deluxe Digital IC Tester

A "must" for anyone working with digital IC's. Lets you determine functions of unknown IC's, check operation against your own data sheets. Features a special high-quality "zero-force" insertion socket — the same as used in expensive production-line testers — lets you make thousands of insertions and extractions without worrying about bent pins. Exclusive "bounce-free," computer-type mercury stepping switch allows safe and easy "exercising" of multi-function IC's such as flip-flops. Has input-output jacks for each pin; neon indicators. Exceptionally easy to operate — 14- or 16-pin IC's can be installed in any position, switches and banana jacks allow each IC pin to be used as input or output. Ideal for use with the Heathkit Digital Techniques Program (page 94).

Kit IT-7400, Shpg. wt. 6 lbs. **79.95**

IT-7400 SPECIFICATIONS: **Pull-up Resistors:** externally connected, with patch terminals. **Patch Terminals:** one at each pin. **Selector Switches:** two at each terminal, one for +5V, step, or off; the other for gas discharge or ground. **Gas Discharge:** allows direct driving of neon indicator lamp for high voltage decoder driver. **Power Supply:** 5 VDC regulated, ±5%, 300 mA and 3.6 VDC, switch selected. **Power Requirement:** 100-135/200-270 VAC, 60/50 Hz, switch selected. **Dimensions:** 4⅝" H x 11⅜" W x 9¼" D.

2 High-accuracy FET/ Transistor Tester

For quick, accurate tests of conventional (bipolar) transistors, diodes, FETs, SCRs, triacs and unijunction transistors. Tests components either in-circuit using color-coded test leads supplied or out-of-circuit using built-in sockets. Shows gain (DC Beta), trans-conductance (Gm) and leakage directly. Other test functions listed below.

Kit IT-3120, Shpg. wt. 5 lbs. **59.95**

IT-3120 SPECIFICATIONS: **Out-of-Circuit Accuracy:** ±5% for DC beta and leakage. **In-Circuit Accuracy:** Indicates good or bad transistor, FET, diode, SCR or triac. **Diode Test:** Tests for forward conduction and blocking. **Unijunction Transistor Test:** Measures Ieb_2s, Ib_2b_1s and emitter current. **Power Requirements:** Two 1½ V cells, (alkaline for best performance, not supplied). **Dimensions:** 5" H x 9⅞" W x 8⅛" D.

3 Transistor/Diode Checker

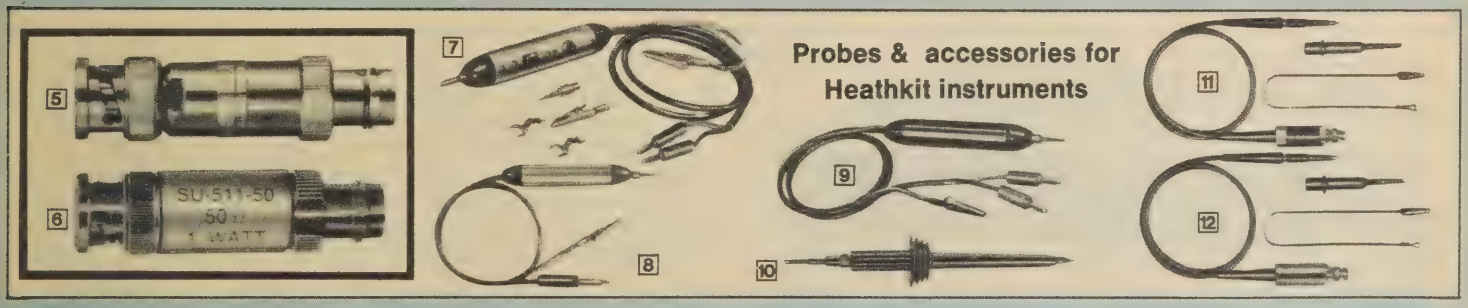
Check high and low power transistors (NPN & PNP) for shorts, leakage, opens and current gain, diodes for forward and reverse current, continuity. Uses two 1.5 V "C" cells, not supplied. 3⅛" H x 3⅛" W x 3¾" D.

Kit IT-27, Shpg. wt. 2 lbs. **12.95**

4 Deluxe Transistor Tester

For reliable in- or out-of-circuit tests. Reads DC Beta (gain) on two ranges, 2-100 and 20-1000. Measures out-of-circuit leakage, identifies NPN or PNP's. Low power — will not damage transistor or diode incorrectly connected. Not for high power or switching transistors.

Kit IT-18, Shpg. wt. 4 lbs. **35.95**



Probes & accessories for Heathkit instruments

5 50-Ohm Termination for frequency counters and scopes. DC to 1 GHz; power rating, 1 watt. VSWR; 250 MHz, 1.2:1, 600 MHz, 2:1.

Assembled SU-511-50; Shpg. wt. 1 lb. **17.50**

6 RF Fuse in UHF BNC-to-BNC connector. Prevents burnout. DC to 500 MHz range; 50 ohms; 12:1 VSWR (max.); insertion loss 1.80 dB max. at 500 MHz. With spare fuses.

Assembled SU-512-50, Shpg. wt. 1 lb. **50.00**

7 Low capacitance scope probe provides direct or X10 attenuated operation; options for 3.3 or 1 megohm input resistance. Banana plug/BNC wiring option.

Kit PK-1, Shpg. wt. 1 lb. **7.95**

8 RF probe for RF measurements from 1000 Hz to over 100 MHz; 11 meg input; 1000 VDC max. at tip; 90 V rms max.

Kit PK-3, Shpg. wt. 1 lb. **6.95**

Assembled PKW-3, Shpg. wt. 1 lb. **8.95**

9 Scope demodulator probe for distortion checks, RF & IF display. 30 V rms max., 500 VDC max. Banana plug/BNC wiring option.

Kit 337-C, Shpg. wt. 1 lb. **5.95**

10 30 kV High Voltage Probes . . . IMA-100-10 Probe multiplies DC ranges of any 10-megohm meter by 100. 1000 megohm input measures voltages as low as 1V in high-impedance circuits. Banana plug connector.

Kit IMA-100-10, Shpg. wt. 1 lb. **11.95**

IMA-100-11 Probe provides X100 measurement for meters with 11-megohm input impedance. (Incl. probe resistance). Phone plug, ground clip.

Kit IMA-100-11, Shpg. wt. 1 lb. **11.95**

Assembled SMA-100-11, Shpg. wt. 1 lb. . . .**16.95**

MA-1000-1 Probe provides X1000 attenuation for meters with 1-megohm input impedance. Banana plug connector.

Kit IMA-1000-1, Shpg. wt. 1 lb. **11.95**

11 High frequency compensated scope probe features DC-60 MHz bandwidth; 10 megohm/ 11.5 pF input impedance; X10 attenuation; 500 V AC & DC rating. Ideal for IO-104, IO-4510 and IO-4530 scopes.

Assembled PKW-101, Shpg. wt. 1 lb. **29.95**

PKA-101-1 Accessory Pack. Includes three assembled tips, two 6-inch ground leads and one 12-inch ground lead.

PKA-101-1, Shpg. wt. 1 lb. **10.95**

12 Direct (X1) scope probe for scopes, frequency counters or checking waveforms and levels in any low impedance circuit. 1 megohm/30 pF input impedance. 600 V AC & DC rating. Range 17 MHz typical. Rise time 17 nsec. typical.

Assembled PKW-104, Shpg. wt. 1 lb. **24.95**

Accessory cables . . . for inter-connecting scopes, counters, etc. All cable is RG-58/U, 50 ohm impedance. Shpg. wt. (each), 1 lb.

Assembled SU-501-1, 1 ft., BNC/BNC **10.00**
Assembled SU-501-3, 3 ft., BNC/BNC **10.00**
Assembled SU-501-6, 6 ft., BNC/BNC **10.00**
Assembled SU-502-3, 3 ft., BNC/UHF **10.00**
Assembled SU-503-3, 3 ft., BNC/Banana ..**10.00**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Get MORE for your counter dollar at Heath!



IB-1103 SPECIFICATIONS

FREQUENCY MEASUREMENTS — Range: 1 Hz to 180 MHz. **Accuracy:** ±1 count ±time base stability. **Readout:** MHz, kHz, or Hz with correctly positioned decimal. **Impedance:** 1 megohm in parallel with 35 pF. **Overload:** Diode-protected input circuit. **TIME BASE — Crystal frequency:** 4 MHz TCXO (Temperature Compensated Crystal Oscillator). **Stability:** Aging rate ±1 ppm/yr. **FREQUENCY MULTIPLIER** — Ranges versus input frequency: **x1:** No multiplier (direct counting). **x10:** 100 Hz to 300 kHz. **x100:** 10 Hz to 100 kHz. **x1000:** 10 Hz to 10 kHz. **EXTERNAL TIME BASE INPUT — Frequency:** 1 MHz with stability greater than 10^{-7}. **Input impedance:** 1000 ohms. **Maximum input:** 3 V rms. **GENERAL — Display:** 8½ digits plus overrange, gate, MHz, kHz, Hz and unlocked lamps. **Operating temperature range:** Operating 10° to 40° C. **Connectors:** 3 BNC's. Input (AC & DC) on front panel; external clock on rear panel. **Power requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅝" H x 8⅝" W x 9¼" D.

Heathkit IB-1103 180 MHz counter with phase-locked frequency counter

$369.95 ***Our finest frequency counter — true professional performance at a low build-it-yourself kit price***

The Heathkit IB-1103 is the counter you need for precise frequency measurements with extremely high resolution. Features phase locked-multiplier, 8-digit readout and a full 180 MHz capability!

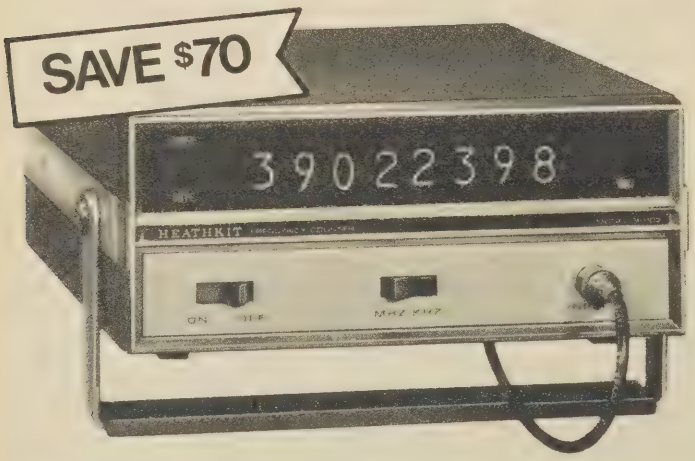
Pushbutton multiplier selection permits input frequency multiplication by 1 (direct), 10, 100 or 1000. An input frequency of up to 10 kHz can be measured down to 0.001 Hz in just 1 second! A temperature compensated, crystal controlled 4 MHz oscillator (TCXO) generates the time base with outstanding accuracy and stability. Three pushbuttons provide 1 millisecond, 100 millisecond and 1 second gate times.

Input sensitivity is 50 mV to 120 MHz and 100 mV to 180 MHz. A rear panel switch lets you bypass the internal oscillator to allow use with an external time base.

Long-life cold-cathode display tubes provide the 8-digit frequency readout. In addition, the readout provides range lamps for status indicators, plus Gate, Overrange and Loop-Unlocked indicators.

The IB-1103 is an easy kit to assemble. Many of the IC's mount on a single circuit board, and the input, time base, multiplier and power supply boards plug into chassis connectors. An extender board is provided to allow easy access to the input, time base and frequency multiplier boards for fast and easy alignment and service checks. The carrying handle/tilt stand lets you position the unit on your bench for most convenient viewing.

Kit IB-1103, Shpg. wt. 14 lbs. **369.95**



Heathkit IB-1102 8-digit counter measures to over 120 MHz with excellent sensitivity

WAS ~~$299.95~~ NOW ONLY $229.95 ***FET input circuitry and TCXO time base for precision measurements — external time base input too***

An extremely versatile and easy-to-use counter! Eight cold-cathode display tubes, an overrange lamp, gate lamp and two range indicator lamps provide a clear, easy to read display. A temperature compensated TCXO time base provides excellent stability and overall accuracy. The high impedance (FET) inputs presents minimum loading to the circuit under test.

Sensitivity is 50 mV to 100 MHz and 125 mV above 100 MHz. Accepts inputs up to 120 V rms from 1 Hz to 150 Hz, 50 V at 40 MHz and 3 V at 120 MHz without damage.

ECL (Emitter Coupled Logic) circuitry and the 8-digit readout let you read frequencies with the best resolution without changing the time base. Resolution is 1 Hz for frequencies up to 99.999 Hz, 10 Hz above. MHz, kHz, overrange and gating conditions are indicated by lighted legends on the front panel.

The IB-1102 goes together easily. The IC's are mounted on sockets and three of the circuit boards plug into the chassis for easy construction and service. The IB-1102's handle has three detent positions so you can put it on your bench at the most desirable viewing angle. The detachable line cord and test cable make the unit easily portable.

Kit IB-1102, Shpg. wt. 11 lbs. .....**Was 299.95 Now Only 229.95**

IB-1102 SPECIFICATIONS

FREQUENCY MEASUREMENTS — Range: 1 Hz to 120 MHz. **Gate time:** 1 msec. or 1 sec. **Accuracy:** ±1 count ±time base stability. **Readout:** kHz or MHz with fixed decimal point. **SIGNAL INPUT — Sensitivity:** 50 mV rms. **Impedance:** 1 megohm in parallel with 35 pF. **Trigger level:** Automatic. **Overload:** Diode protected input circuit. **TIME BASE — Crystal Frequency:** 4 MHz, TCXO (Temperature Compensated Crystal Oscillator). **Stability: Aging rate:** ±1 ppm/yr. **Short term:** Better than 0.5 ppm in 1 sec. **Temperature:** ±1 ppm between 15°C to 50°C. **Line voltage:** 0.5 ppm with ±10% voltage change. **Frequency trimming: Accuracy:** ±1 ppm. **Range:** ±10 ppm. **Sample rate:** 500 msec. (Time between two openings of counting gate). **EXTERNAL TIME BASE INPUT: Frequency:** 1 MHz with stability $>10^{-7}$. **Input impedance:** 1000Ω. **Maximum input:** 3V rms. **GENERAL — Display:** 8 digits plus overrange, gate, kHz, and MHz lamps. **Operating temperature range:** Operating 10°C to 40°C. **Power requirement:** 120/220 VAC, 50/60 Hz, 30 W. **Connectors:** Two BNC's. Input on front panel; external clock on rear panel. **Cabinet dimensions:** 8⅝" W x 3⅝" H x 9¼" D.

What's it like to build a kit? We'll show you at your nearest Heathkit Electronic Center.

Our lowest-priced frequency counter—value PLUS!

Power/Time Base Switch Turns the IM-4100 on, selects between kHz and MHz for frequency measurements, and selects second or millisecond time bases for period measurements.

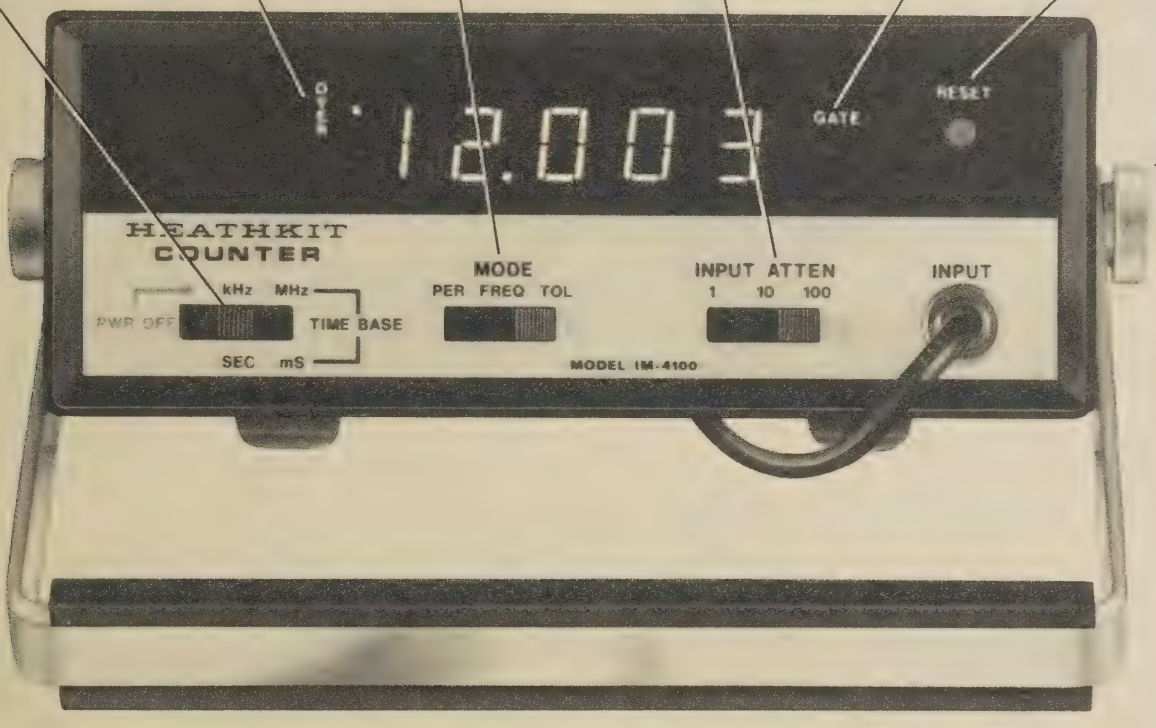
Overrange Indicator Indicates when the number to be displayed is larger than the display can handle.

Three Operating Modes Modes for frequency measurement to 30 MHz, period measurements to 99.999 seconds, or totalize for events counting to 99,999 are easily switch-selected.

Input Attenuator Three-position switch provides ÷1, ÷10 or ÷100 attenuation of the Input signal.

Gate Lamp Flashes on when the display is updated. Also functions as a logic probe for troubleshooting during calibration or servicing.

Reset Switch Push-button switch resets the display to zero in any mode of operation.



Our most versatile counter — frequency to 30 MHz, period to 99.999 seconds, events to 99,999

$139.95 Kit ***Gives you the performance you NEED for precision measurements — outstanding resolution and sensitivity!***

The Heathkit IM-4100 is an almost unbelievable counter value. It's a full five-digit frequency counter. It will also function in period mode or totalize mode. It provides built-in input attenuation and 12-volt operation all in one compact package. The latest digital design and a stable 10 MHz crystal oscillator assure outstanding accuracy and precision on all measurements. Its excellent resolution makes it ideal for a variety of signal alignment applications.

As a frequency counter, the IM-4100 is guaranteed to 30 MHz with 1 Hz resolution. Sensitivity is a low 15 mV from 50 Hz to 30 MHz, 50 mV below 50 Hz.

In the period mode, it measures intervals up to 99.999 seconds. Using the millisecond time base, it resolves to 1 μsec! This mode can be used for low frequency measurements with high accuracy. Just position the TIME BASE switch to mS and the MODE switch to PER. Then solve the equation f = 1/period, using the displayed value.

The totalize mode will add up (totalize) event pulses up to a count of 99,999. Pushing the RESET button starts the count at zero. An inhibit signal can be applied through a rear panel terminal to stop the totalize mode at any time, without loss of the displayed count.

The front panel attenuator switch allows the amplitude of input signals to be divided by 1, 10 or 100. The pushbutton RESET switch quickly resets the display to zero in *any* mode. Front panel display includes overrange indicator and a gate lamp.

A rear panel switch easily selects internal or external time base. The rear panel connector can be used as an input for the external time base signal, or as an output to check the internal 10 MHz time base or provide a convenient frequency standard of 1 MHz for bench use. Switch selected 120 or 240 VAC, or operation from any 12-volt DC source is possible with the IM-4100 — no extra accessories are needed. Power is applied through a rear panel connector (mating connector supplied).

The IM-4100 is an easy kit to build, with an open chassis layout, circuit board construction and wiring harness to simplify assembly. Or you can order it factory assembled and tested. Add the IM-4100 to your service bench today — dollar for dollar, it's one of the best counter values you'll ever see!

Kit IM-4100, Shpg. wt. 7 lbs. **139.95**
Factory assembled and tested version of above.
SM-4100, Shpg. wt. 6 lbs. **200.00**

IM-4100 SPECIFICATIONS

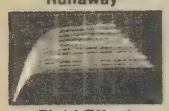
FUNCTIONS — **Frequency:** 5 Hz to 30 MHz. **Period:** 1 μsec resolution to 99.999 sec. **Totalize:** 1-99,999 events. **INPUT — Frequency Range:** 5 Hz to 30 MHz minimum. **Sensitivity:** 15 mV rms (50 mV, 5 Hz to 50 Hz). **Period Pulse Width:** 25 nsec minimum. **Low Frequency Signal Risetime:** 1 msec for signals less than 10 Hz. **Input Impedance:** 1 megohm shunted by less than 35 pF. **Protection:** 240 volts rms at 60 Hz. **Attenuator:** X1, X10, X100 fixed compensation. **TIME BASE — Frequency:** 10 MHz. **Setability:** ±1 ppm. **Temperature stability:** ±10 ppm, maximum 0° to 40° C ambient. **OSCILLATOR CONNECTION — External Input Frequency:** DC to 20 MHz. **External Input Sensitivity:** TTL or 2.5 V rms from 50-ohm source. **Internal Output:** TTL signal at 1 MHz. **GENERAL — Gate Interval:** kHz-1 sec, MHz-1 msec. **Manual Gate:** DC control in events mode using external OSC input connector. **Display Time:** 200 msec plus gate interval. **Power Requirement:** 105-130 or 210-260 VAC (switch-selected). 60/50 Hz, (at 25 watts); or 9-14 VDC at 1.25 amperes. **Dimensions:** 2¾" H x 7¼" W x 10½" D (less handle).

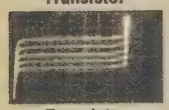
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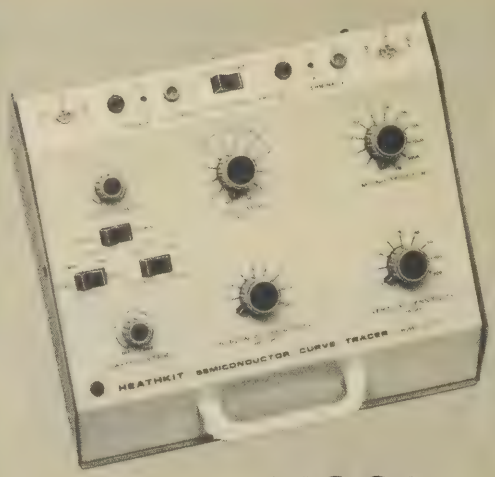
Versatile Instruments to round out your test bench


Unijunction Transistor


"Thermal Runaway"


Field Effect Transistor


Transistor Breakdown



$109.95

Check semiconductor parameters with your oscilloscope and the IT-1121 Curve Tracer

- *Test bipolar transistors, diodes, SCR's, FET's, etc.*
- *Lets your oscilloscope display gain (beta), leakage, breakdown voltage, saturation, and more.*
- *Ideal for sorting and inspection uses, selecting specific devices for circuit design.*

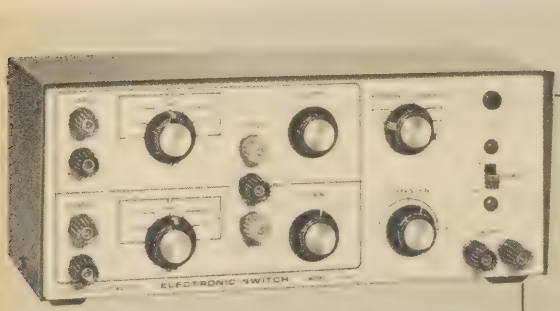
Take the guesswork out of semiconductor testing with the Heathkit IT-1121 Curve Tracer. An invaluable tool for the designer, technician or the serious electronic hobbyist. Just connect the IT-1121 to any oscilloscope with horizontal sensitivity of 0.5 V/div. and vertical sensitivity of 1 V/div. and get an accurate display of operating parameters for virtually any discrete semiconductor. Devices such as bipolar transistors, diodes, SCRs, triacs, FETs, etc. can be inspected or tested for specific applications.

Plug-in cables are supplied for fast, easy scope hookup. A calibration switch permits fast and accurate scope calibration. You can display fundamental parameters such as gain (beta), leakage, breakdown voltage, saturation, forward conduction voltage, output admittance, linearity, capacitance effects, temperature effects and others (see insets for typical displays). The extensive manual included in each kit tells how to intrepret each display.

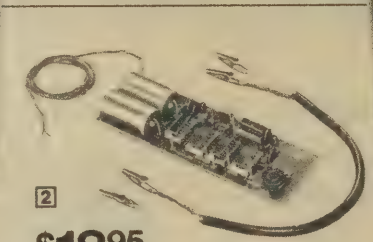
Low profile styling and the sloped front panel permit the Curve Tracer to sit in front of most oscilloscopes without blocking the CRT. A convenient handle provides portability. Extra leads (included) allow you to test large devices or make in-circuit tests. The versatility, accuracy, and reliability of this test instrument will make it a valuable addition to your work bench for years to come.

Kit IT-1121, Shpg. wt. 11 lbs. **109.95**

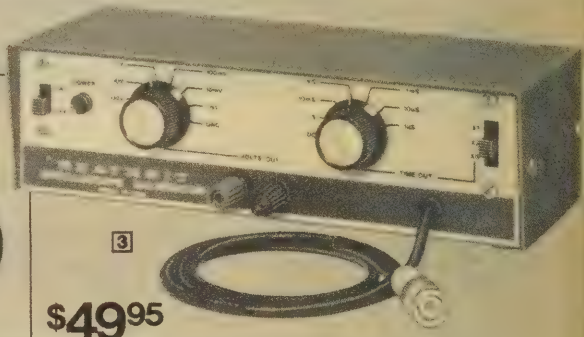
IT-1121 SPECIFICATIONS: **Sweep Voltage Ranges:** 0-40 volts at 1 ampere max. 0-200 volts at 200 mA max. **Sweep Voltage Sampling:** .1, .2, .5, 1, 2, 5, 10, 20 and 50 V/div. ±3%. **Sweep Current Sampling:** .5, 1, 2, 5, 10, 50, 100 and 200 mA/div. ±%. **Sweep Dissipation Resistors:** 0, 10, 50, 100, 500, 1000, 5000, 10k, 50k, 100k, 500k, 1 meg ±10%. **Step Currents:** .002, .005, .01, .02, .1, .2, 2, 5, and 10 mA/step, ±3%, ±250 nA offset current max. **Step Voltages:** .05, .1, .2, .5, and 1 volt/step, +3%, ±5% mA maximum offset voltage. **Calibration Source:** 9 volts ±2% in 1 volt steps. **Polarity:** PNP and NPN (P Channel-N Channel). **Oscilloscope Requirements:** Bandwidth to 20 kHz or greater. (DC-coupled oscilloscope is recommended). **Power Requirement:** 110 to 130 or 220 to 260 VAC. **Dimensions:** 4½″ H x 11¼″ W x 10″ D.



1 $47.95



2 $18.95



3 $49.95

1 Heathkit ID-4101 Scope Switch adds dual-trace capability to any external-triggered scopes

Gives any single beam scope with external trigger input dual-trace versatility! Provides simultaneous display of two separate input signals for comparison, observing phase relationships, etc. Also can be used as impedance coupler, preamp or square wave generator in experimental circuits. A sync output on each channel permits scope sweep to be locked to either input signal. DC coupling adds versatility. Frequency response — DC-5 MHz + 1½ dB, −3 dB.

Kit ID-4101, Shpg. wt. 5 lbs. **47.95**

ID-4101SPECIFICATIONS: **Signal Gain:** >10 times. **Maximum input signal:** 600 VDC or 600 VAC p-p. **Input impedance:** 1 megohm/50 pF. **Maximum signal output:** 8 V p-p. **Output loading:** 1000 ohm minimum. **Hum and noise:** (single channel only). <40 mV p-p. **Chopping rates:** Approx. 100, 500, 1000 and 5000 Hz. **Power requirement:** 120/240 V, 60/50 Hz, 6 W. **Dimensions:** 4¼″ H x 10⅜″ W x 5⅛″ D.

2 IOA-4510-1 low-priced Scope Calibrator

The Heathkit IOA-4510-1 is an easy-to-build, easy-to-use crystal-controlled time base designed by Heath's 'scope engineers for oscilloscope calibration. It provides everything you need to accurately calibrate your new Heathkit IO-4510 or IO-4530. It generates a square wave signal with selected ranges from 1 MHz to 1 kHz at TTL output levels. The 1 kHz output level can be adjusted from 0 to 4.7 volts peak. Draws operating power from IO-4510 or IO-4530.

Kit IOA-4510-1, Shpg. wt. 1 lb. **18.95**

3 IG-4505 Deluxe Scope Calibrator for oscilloscopes with bandwidths to 35 MHz

The IG-4505 is a practical oscilloscope calibrator at a sensible price. It provides all the waveforms necessary to adjust sweep speeds, vertical calibration, delay line terminations, high frequency compensation and attenuator compensation for oscilloscopes with bandwidths up to 35 MHz. Round out your test bench today...order the IG-4505.

Kit IG-4505, Shpg. wt. 4 lbs. **49.95**

IG-4505 SPECIFICATIONS: **TIME CALIBRATION: Range:** 0.5 sec. to 1 μs square wave in 1-2-5 sequence, accurate to within .01%. **Amplitude:** ≈200 mV peak. **Rise Time:** ≤4 ns. **Overshoot:** ≤3%. **Output:** 50 ohms terminated cable. **VOLTAGE CALIBRATION: Ranges:** 1 mV to 100 V peak square wave in decade sequence. **Accuracy:** To within 2% with 1MΩ load referenced to 1 V position. **Rise Time:** ≤2 μs. **Frequency:** DC, 2 Hz to 10 kHz in 1-2-5 sequence. **Accuracy of Internal Voltage Standard:** Within 1%. **Power Requirement:** 120-240 Volts AC, 60/50 Hz, 12 watts.

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

Our finest oscilloscope does it ALL!

Dual-Trace, DC-15 MHz — the one you NEED for professional service, circuit-design and engineering — available fully assembled, or in money-saving kit form





Easy kit assembly and service — major circuitry is contained on 5 PC boards



TV Servicing — excellent for stage by stage troubleshooting



Lab Work — circuit design, testing components, checking assembly

Heathkit IO-4510 Dual-Trace Oscilloscope

$599.95 Kit

- ***DC-15 MHz bandwidth with post-deflection accelerated CRT for high brightness***
- ***Excellent 1 mV/cm input sensitivity***
- ***45 MHz typical triggering bandwidth***
- ***Time base sweep to 100 nsec/cm; x5 sweep magnifier***
- ***Y_1 and Y_2 trigger selection***
- ***X-Y capability***
- ***Fully regulated power supplies***
- ***Operates on any common line voltage from 100 to 280 VAC . .***

The IO-4510 offers professional scope performance at a low price — plus DC-15 MHz bandwidth, 1 mV/cm vertical sensitivity, time base to 100 ns/cm and complete dual trace capability. It also offers many features others don't provide at anywhere near our low price.

Vertical input sensitivity of 1 mV/cm is provided over the entire bandwidth. With the 4510 and a X10 probe (the way you're most likely to use an oscilloscope), you can read waveforms to 10 mV, not the 50 or 100 mV found on other scopes. See page 72 for the PKW-101 high impedance isolating probe with 10:1 attenuation.

The IO-4510 will typically trigger on signals up to 45 MHz and is guaranteed to 30 MHz. And there's no stability control needed with the digitally-controlled triggering circuits. In the automatic mode, a reference baseline is generated even when the trigger signal is absent. Complete triggering controls are provided with choice of AC, ACF or DC coupling, triggering at any point on the vertical signal. The ACF fast coupling mode is provided to reject low-frequency components of the trigger waveform for accurate scope triggering. Choice of normal or automatic sweep uses any one of 20 time bases from 0.2 sec/cm to 0.1 μsec/cm. Any sweep speed can be magnified five times. An externally generated horizontal signal can also be selected.

Internal delay lines insure start of the horizontal sweep prior to the beginning of the vertical signal. The IO-4510 guarantees display of at least 20 nanoseconds of the pre-triggered waveform, insuring complete waveform display — mandatory for logic analysis.

The IO-4510 is remarkably easy to build and service. All major circuitry is located on five circuit boards for easy trouble-shooting. Push-on connectors permit fast removal of any board. Even the CRT can be removed and replaced in a matter of minutes.

The fully regulated power supplies provide stable voltages regardless of varying line voltage and load conditions. An adjustable AC line switch is easily accessible and is used to match the regulated power supplies to any common line voltage from 100 VAC to 280 VAC.
IO-4510 calibration requires precise source of square waves such as IOA-4510-1 or IG-4505 on page 70.

Kit IO-4510, Shpg. wt. 36 lbs. **599.95**

SO-4510, factory assembled & calibrated version of IO-4510, Shpg. wt. 28 lbs. **785.00**

IO/SO-4510 SPECIFICATIONS

VERTICAL: **Deflection Factor: Sensitivity:** 1 mv/cm to 5 V/cm. **Attenuator:** 12 steps in 1-2-5 sequence. **Variable:** Continuous between steps to approx. 15 V/cm. **Accuracy:** Within 3% (20°C to 30°C), 5% (10°C to 40°C) referenced to 0.2 V/cm @ 25°C. **Vertical Response: DC Coupling:** DC to 15 MHz (—3 dB). **AC Coupling:** 2 Hz to 15 MHz (—3 dB). **Rise Time:** 24 nanoseconds. **Overshoot:** Less than 3%. **Delay Line:** Allows display of at least 20 ns of pretriggered waveform. **Vertical Input: Impedance:** 1 megohm shunted by approx. 40 pF. **Maximum Input:** 400 volts peak combined AC & DC. **Connector:** BNC. **Vertical Modes: Single:** Y_1 or Y_2 selected by vertical position controls. **Dual:** Chopped (200 kHz) or alternate automatically selected by Time Base switch. HORIZONTAL: **Time Base: Ramp:** 0.2 s/cm to 0.1 μsec/cm. **Positions:** 20 steps in 1-2-5 sequence. **Variable:** Continuous between ranges to approx. 0.6 sec/cm. **Accuracy:** Within 3% (20°C to 30°C), 5% (10°C to 40°C) referenced to 1 ms/cm @ 25°C. **Magnifier:** X5 (adds additional 2% to sweep accuracy). **External: Sensitivity:** 0.2 V/cm (approx.) **Impedance:** 200 kilohms (approx.). **Polarity:** Negative input causes right hand deflection. **Frequency Response:** DC to 1 MHz (−3 dB). **Connector:** BNC. **TRIGGER: Internal: Automatic:** Zero crossing ±0.5 cm. **Normal:** Adjustable over 8 divisions. **Slope Selection:** + or −. **External: Automatic:** Zero crossing ±0.2 volts. **Normal:** Adjustable over ±5 volts. **Slope Selection:** + or −: **Impedance:** 1 megohm shunted by approx. 30 pF. **Connector:** BNC. **X-Y: Y Channel:** Same as Vertical. **X Channel:** Same as Vertical, except response limited to 1 MHz and no delay line. **Phase Shift:** Less than 3° @ 100 kHz. **GENERAL: CRT: Type:** 6 x 10 cm spiral PDA. **Acceleration Potential:** 4 kV regulated. **Phosphor:** P31. **Graticule:** 6 x 10 cm illuminated, variable by front panel control. **Power: Voltage Range:** 100 to 140 VAC/200 to 280 VAC, switch selected, 75 watts. **Internal Supplies:** Fully regulated. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 6.4" H x 12.9" W x 19.3" D (handle extended). **Weight:** 24 lbs.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Get better performance for your Scope dollar



Low-Priced
Dual-Trace Scope

Heathkit IO-4530...perfect for TV service and home experimenting

$319.95 Kit

- *True X-Y operation*
- *DC-10 MHz bandwidth*
- *Mu-metal shielding helps eliminate interference*
- *Regulated HV power supply*
- *TV coupling*

Features like TV coupling, DC-10 MHz bandwidth, wide-band triggering capability, 10 mV/cm vertical input and calibrated X-channel input make it a versatile, easy to use general-purpose scope for the service technician or hobbyist.

Y-input has maximum sensitivity of 10 mV with 11-position attenuator to set deflection from 10 mV/cm to 20 V/cm. For true X-Y operation, a calibrated X-input is provided with maximum sensitivity of 20 mV. Its calibrated 3-position attenuator provides three AC or DC ranges from 20 mV/cm to 2 V/cm.

Trigger circuits are digitally controlled, requiring only a Level control and a Slope switch. The time base can be precisely triggered at any point along the positive or negative slope of the trigger signal. In automatic, triggering is at the zero crossing point. In normal, the level control is adjustable over the complete 8 cm span. In the TV trigger coupling, the 4530 can be precisely triggered on the vertical or horizontal signal in a complex TV signal. A low-pass filter with a 1 kHz cutoff is used in the TV coupling mode.

The IO-4530 is designed for easy kit assembly and servicing. Calibration requires a source of square waves such as the IO-4510-1 or IG-4505 on page 70.

Kit IO-4530, Shpg. wt. 31 lbs. **319.95**

Factory assembled and calibrated version of above.
SO-4530, Shpg. wt. 26 lbs. **455.00**

IO/SO-4530 SPECIFICATIONS: VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. Attenuator: 11 steps in 1,2,5 sequence. Variable: Continuous between steps to approx. 50 V/cm. Accuracy: Within 3%. Vertical Response: DC Coupling: DC to 10 MHz. AC Coupling: 2 Hz to 10 MHz. Rise Time: 35 ns. Overshoot: <5%. Vertical Input: Impedance: 1 MΩ shunted by ≈38 pF. Maximum Input: 400 V. HORIZONTAL: Time Base: Ramp: 0.2 S/cm to 200 ns/cm in decade sequence. Variable: Continuous between ranges to approximate 2 s/cm. Accuracy: Within 5%. Magnifier: X5. External: Deflection Factor: Sensitivity: 0.02 V/cm to 2 V/cm in decade sequence. Variable: Continuous between steps to approx. 20 V/cm. Accuracy: Within 3%. Response: DC Coupling: DC to 1 MHz. AC Coupling: 2 Hz to 1 MHz. Rise Time: 35 ns. Overshoot: <5%. Input: Impedance: 1 MΩ shunted by ≈40 pF. Max. Input: 400 V. TRIGGER: Internal: Automatic: Zero crossing ±0.5 cm. Normal: Adjustable over 8 divisions. Slope Selection: + or −. External: Automatic: Zero crossing ±0.03 V. Normal: Adjustable over 1.2 V. Slope Selections: + or −. Impedance: 1 MΩ shunted by ≈40 pF. X-Y: Phase Shift: Less than 5° @ 100 kHz. GENERAL: CRT: 5″ round. Phosphor: P31. Graticule: 8 x 10 cm. Power: 110-130/220-260 VAC, switch selected, 65 watts. Operating Temperature Range: 10°C to 40°C. Dimensions: 6.4″ H x 12.8″ W x 19.2″ D (without handle).

Heathkit IO-4550—Dual-Trace, DC to 10 MHz—with brighter trace and faster writing speed

$399.95 Kit

- *Regulated high-voltage power supply*
- *Extra-high sensitivity for low-level signals*
- *X-Y operation for precise phase measurements*

The IO-4550 is an excellent choice for TV service, electronics experimentation and design. Its extra-bright trace allows easy reading even in high ambient light; its two vertical input channels have a maximum sensitivity of 10 mV/cm for accurate measurements.

Input channels are displayed, chopped or alternate, as selected by the time base switch. A trigger select switch and level control allow the time base to be precisely triggered at any point along the positive or negative slope of the signal. The digitally controlled time base provides automatic triggering, so no stability control is necessary and fewer adjustments are required.

The fully regulated high voltage power supply assures operation to specifications on standard line voltages from 100 to 270 volts. Complete mμ-metal shielding helps prevent interference.

Improved circuitry and just 4 printed circuit boards make the IO-4550 an easy kit to assemble. Calibration requires a precise source of square waves such as IOA-4510-1 (with additional 6-volt power source) or IG-4505 on page 70.

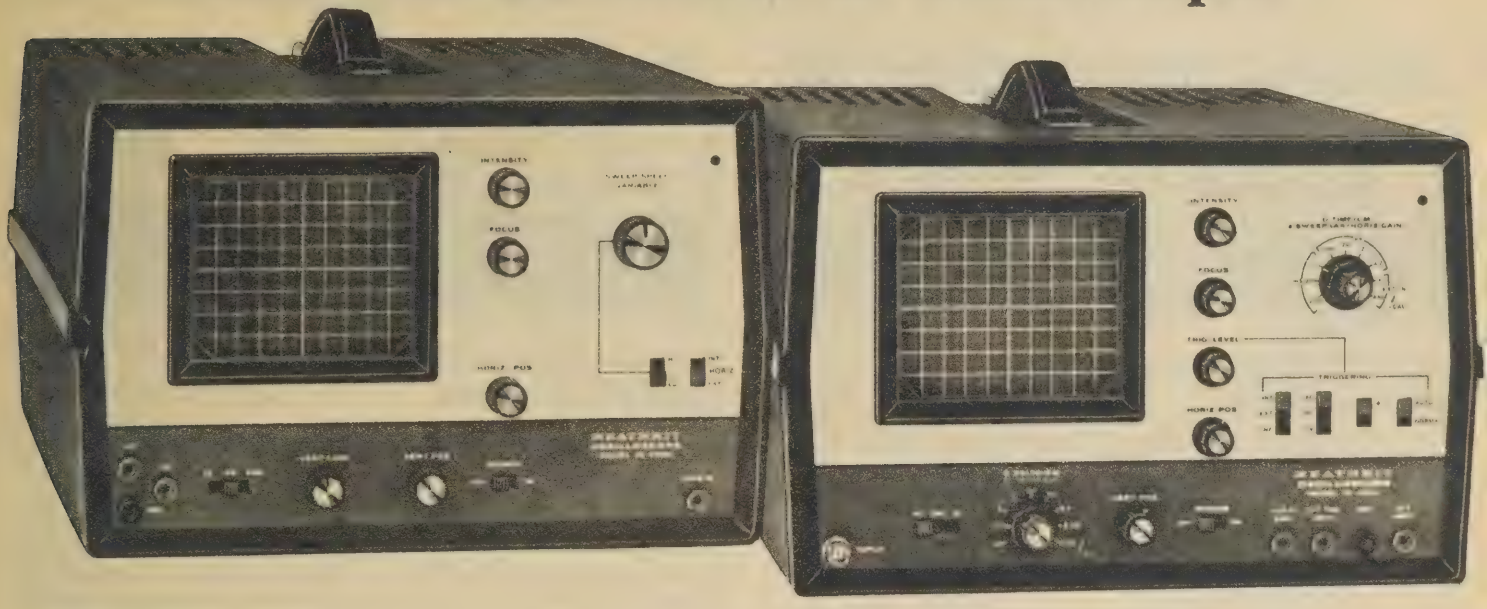
Kit IO-4550, Shpg. wt. 27 lbs. **399.95**

Factory assembled and calibrated version of above.
SO-4550, Shpg. wt. 25 lbs. **560.00**

IO/SO-4550 SPECIFICATIONS: VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. Attenuator: 11 steps in 1-2-5 sequence; Variable: Continuous between steps to approximately 60 V/cm. Accuracy: Within 3%. Vertical Response: DC Coupling: DC to 10 MHz. AC Coupling: 2 Hz to 10 MHz. Rise Time: 35 ns. Overshoot: Less than 5%. Vertical Input: Impedance: 1 MΩ shunted by 38 pF. Maximum Input: 400 V. HORIZONTAL: Time Base: Ramp: 0.2 s/cm to 200 ns/cm. Positions: 19 steps in 1-2-5 sequence. Variable: Continuous between ranges to approximately 0.6 s/cm. Accuracy: Within 3%. Magnifier: X5 (adds additional 2% to sweep accuracy). External: Sensitivity: 0.1 V/cm (approx.). Impedance: 100 kΩ (approx.). Frequency Response: DC to 1 MHz. Connector: BNC. TRIGGER: Internal: Automatic: Adjustable over 10 divisions. Normal: Adjustable over 10 divisions. Slope Selection: + or −. External: Automatic: Adjustable over 0.8 V. Normal: Adjustable over 0.8 V. Slope Selection: + or −. Impedance: 1 MΩ shunted by 40 pF. Connector: BNC. X-Y: Y Channel: Same as Vertical: X Channel: Same as vertical except response is limited to 1 MHz. Phase Shift: Less than 8° @ 100 kHz. GENERAL: CRT: Type: 5″ round. Acceleration Potential: 1.8 kV regulated. Phosphor: P-31. Graticule: 8 x 10 cm. Power: Voltage Range: 100-135 VAC/200-270 VAC switch selected, 70 watts at 120 VAC (240 VAC). Operating Temperature: 10°C to 40°C. 6.9″ H x 12.9″ W x 19.3″ (without handle).

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Heath has the VALUES in Oscilloscopes



$124.95

The lowest priced auto-triggering oscilloscope anywhere! DC-5 MHz, 100 mV sensitivity

The low price of the IO-4560 now makes it possible for you to have the most universal of all test instruments on your bench — the oscilloscope. The 4560's ability to display many types of voltage waveforms permits study of complex signals, such as those found in audio devices, television receivers, transmitters and other electronic equipment. It's ideal for service techs and hobbyists.

Operation couldn't be easier. Special effort was expended in the design of the IO-4560 to keep the number of controls and switches to a minimum. In addition to the power switch, there are only nine switches and controls, for correct operation — even the first time. The large 8 x 10 cm screen makes for easy waveform measurements.

Auto-triggering provides automatic, positive locking of the displayed waveform. A stable display is assured for any frequency up to the full 5 MHz bandwidth. The uncalibrated sweep speed control provides continuous adjustment from 20 ms/cm to 200 ns/cm.

The DC to 5 MHz vertical bandwidth is more than adequate for general design and service work. Maximum vertical sensitivity is 100 mV with a front panel switch for X1, X10 and X100 attenuation, AC or DC. Vertical input impedance is 1 megohm for low circuit loading. Up to 400 VDC can be applied directly without circuit damage, making it a great scope for student use. For phase and frequency measurements, an external horizontal input can be applied directly through the front panel input jack. It has 250 mV sensitivity with DC to 100 kHz bandwidth. Display stability is excellent because the low voltage supplies for the amplifiers and sweep circuit are zener regulated. The primary circuit of the power transformer is fused for protection from overload.

The IO-4560 is an easy oscilloscope to build, making it a great kit for hobbyists and students. Just build the sweep circuit board, assemble the chassis, solder the components, install the CRT and calibrate. Instructions given in the assembly manual are easy to understand. And if something goes wrong, a trouble-shooting table helps you quickly find the problem.

Easy assembly and operation, reliable, accurate performance, and low price make the IO-4560 the best instrument buy in years.

Kit IO-4560, Shpg. wt. 19 lbs. **124.95**

IO-4560 SPECIFICATIONS: VERTICAL CHANNEL: Input Impedance: 1 megohm. Sensitivity: 100 mV/cm. Maximum Input Voltage: 400 volts DC. Frequency Response: DC to 5 MHz ±3 dB. Attenuator: X1, X10, X100, AC or DC. HORIZONTAL CHANNEL: Input Impedance: 100 kΩ. Sensitivity: 0.25 volt/cm (uncalibrated). Frequency Response: DC to 100 kHz. TIME BASE: Sweep: 20 ms to 0.2 μs/cm (uncalibrated). Trigger Mode: Automatic. GENERAL: CRT: 5DEP31F, 8 x 10 cm viewing area. Blue-green, medium persistance phosphor. 5″ round, flat-face tube. Graticule: 8 x 10 cm. Power Requirements: 110-130 or 220-260 VAC. 60/50 Hz 35 watts. Dimensions: 8″ H x 13″ W x 17″ D.

$199.95

DC to 5 MHz Oscilloscope with complete triggering controls including TV coupling

The Heathkit IO-4541 is a triggered scope with controls and features that are not found in other scopes in this price range. A stable triggering circuit is used for solid waveform displays (not the recurrent type sweep generator normally used in other scopes). Trigger controls include selection of normal or automatic modes, switch controlled AC or DC coupling and front panel input of external triggering signals. All front panel trigger controls are clearly labeled for "no mistake" operation. A special TV position on the trigger selector control allows for low frequencies to pass while rejecting the high frequencies, so the 4541 will easily trigger on the vertical component of a complex TV signal.

Any one of seven calibrated time bases, from 200 ms/cm to 0.2 μs/cm can be selected by the time/cm switch. A variable control provides for settings between steps. The horizontal amplifier will accept external inputs from DC to 100 kHz.

Vertical input sensitivity of 20 mV/cm and nine calibrated vertical attenuator positions, up to 10 V/cm, will accommodate a broad range of input signals. A variable gain control gives precise control between settings.

Both vertical amplifier and horizontal sweep circuit power supplies are regulated to provide stable voltages to all circuits under varying line voltage conditions. Partial mu-metal shielding helps eliminate display error.

Accurate measurements are easily made from the bright 8 x 10 cm screen. The lightweight, durable cabinet combines professional appearance with easy-to-carry portability. The flush mounted handle allows stacking to avoid an instrument-crowded bench.

The DC-5 MHz bandwidth and excellent sensitivity input allow the IO-4541 to be used for nearly all types of waveform display and measurement applications. When you consider all the performance and features the IO-4541 provides, you can easily see why other scopes don't compare in value.

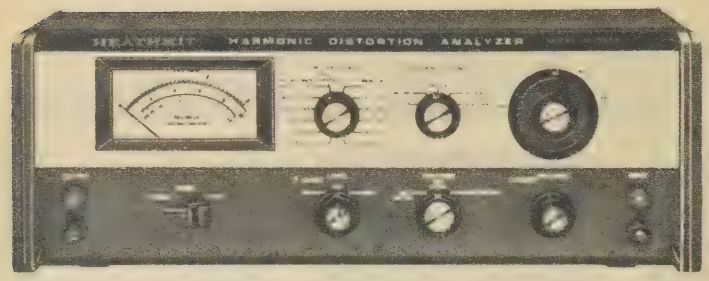
Kit IO-4541, Shpg. wt. 23 lbs. **199.95**

Factory assembled and calibrated version of above.

SO-4541, Shpg. wt. 25 lbs. **320.00**

IO-4541 SPECIFICATIONS: VERTICAL: Bandwidth: DC to 5 MHz ±3 dB. Attenuator: 1, 2, 5 sequence, calibrated and variable. Rise Time: 70 ns. Overshoot: 5% at 1 kHz. Impedance: 1 MΩ/38 pF. Sensitivity: 20 mV/cm. SWEEP: Type: Triggered. Range: 200 ms — .2 μs, 7 steps plus variable. Trigger Source: Int/Ext/Line. Trigger Modes: AC/DC/TV; +/— Slope; Auto/Norm. HORIZONTAL: Sensitivity: .25 V/cm. Bandwidth: DC to 100 kHz. Impedance: 1 MΩ/50 pF. Ext. Horiz. Input: X1 and X10 attenuator. GENERAL: CRT: 5DEP31F, 8 x 10 cm, green, medium-persistance phosphor, 5″ round, flat-face tube. Accelerating Potential: Approx. 1.5 kV. Graticule: Painted, 8 x 10 cm. Power Requirements: 110-130 VAC or 220-260 VAC, 50/60 Hz, 35 watts. Dimensions: 8″ H x 13″ W x 17″ D.

Heathkit Audio Test and Service Equipment gives



Heathkit IM-5258 Total Harmonic Distortion Analyzer

$229.95 Kit

- *Measures THD as low as 0.03%*
- *Perfect for optimum adjustment of hi-fi amplifiers and receivers*

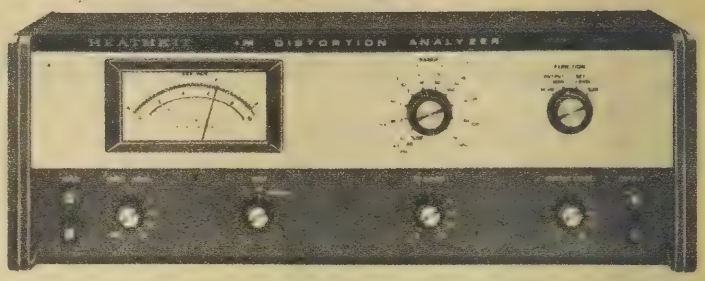
The Heathkit IM-5258 is a professional-grade total harmonic distortion (THD) analyzer ideal for use in audio service shops, or by hi-fi enthusiasts interested in getting and maintaining peak performance from their amplifiers and receivers. It can also be used for quality control in amplifier and receiver manufacture. The IM-5258's outstanding sensitivity and bandwidth permit it to measure total harmonic distortion levels to as low as 0.03%, over a frequency range of 5 Hz to 100 kHz, so it can be used to check amplifiers and receivers claiming the finest specifications. Also functions as an AC voltmeter with 12 switch-selected ranges and direct dB measurements. An automatic null circuit, usually found only on analyzers costing much more, makes the IM-5258 really easy to operate! Simply "rough-tune" the unit for approximate balance and flip the AUTO mode switch. The analyzer automatically balances, eliminating the need for delicate fine-tune adjustments. Has fine and coarse frequency tuning and balance controls, input binding posts for wire leads or banana plug connectors, a level switch and level control for proper signal attenuation. Output binding posts for use with an oscilloscope, an external voltmeter, or a spectrum analyzer.

Kit IM-5258, Shpg. wt. 17 lbs. **229.95**

Factory assembled version of above.

SM-5258, Shpg. wt. 16 lbs. **350.00**

IM/SM-5258 SPECIFICATIONS: **Frequency Range:** 5 Hz to 100 kHz in 5 ranges; 5-10 Hz, 10-100 Hz, 100-1000 Hz, 1-10 kHz and 10-100 kHz. **Distortion Range:** reads from 0.3% to 100% full scale in 6 ranges with a 1-3-10 sequence. **Residual Distortion:** 0.03% or less. **Input Impedance:** 1 megohm/70 pF maximum. **Required Input Level:** 316 mV for distortion measurements. **Voltmeter:** 1 mV to 300 V in 12 ranges with a 1-3-10 sequence. **Accuracy:** 5% of full scale. **Output:** 100 mV for full scale meter deflection. **Power Requirement:** 100-135 VAC or 200-270 VAC switch selected, 60/50 Hz. 12 watts. **Dimensions:** 5⅜" H x 15" W x 11½" D.



Heathkit IM-5248 Intermodulation Distortion Analyzer

$179.95 Kit

- *Measures distortion as low as 0.01%*
- *Built-in 60 Hz and 2000 Hz oscillators*
- *External oscillator inputs*

This intermodulation distortion analyzer is designed for professional-quality audio servicing and testing. It has convenience features and specifications that make it the equal of instruments far more expensive. Its operating ranges and accuracy make it capable of performing IM distortion measurements on sophisticated high-fidelity receivers and amplifiers. IM distortion measurements are made according to the SMPTE* standard, but the IM-5248's extra flexibility and full controls let you use a variety of other test conditions. The built-in AC voltmeter can be used separately and has 12 switch-selected ranges. Its wide response, 5% full-scale accuracy and excellent sensitivity make it ideal for a variety of AC voltage measurements. The IM-5248 can also be used to make dB measurements. Five-way binding post connectors let you use most associated equipment without special cables or adapters.

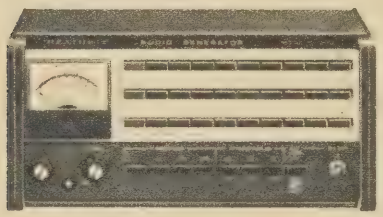
Kit IM-5248, Shpg. wt. 15 lbs. **179.95**

Factory assembled version of above.

SM-5248, Shpg. wt. 15 lbs. **265.00**

***Society of Motion Picture and Television Engineers**

IM/SM-5248 SPECIFICATIONS: **IM METER: Ranges:** 0.1 to 100% in a 1-3-10 sequence. Readable to 0.01% plus residual. **Residual:** Less than 0.01% with internal generators. **Accuracy:** 5% full scale. **Input Impedance:** 1 megohm. **HF sensitivity:** 100 mV minimum. **Oscillator Frequencies:** 60 Hz (line syncable), and 7000 Hz. **Generator Amplitude:** Adjustable, 100 mV to 3 volts rms (50 mV to 1.5 volts into 600 ohms), with 60 Hz and 7000 Hz at a 4:1 ratio. **Impedance and Bandwidths of External Oscillator Outputs:** LF — 51k ohms, 10 to 500 Hz. HF — 18k ohms to 25k ohms; 2 kHz to 100 kHz. **Impedance of Oscillator Outputs:** 1000 ohms. **Connectors:** 5-way binding posts. **AC VOLTMETER:** 10 mV to 300 volts in a 1-3-10 sequence. **Input Impedance:** 1 megohm. **Accuracy:** 5% full scale. **Frequency Response:** 5 Hz to 1 MHz, 3 dB. **Power Requirement:** 100-135 VAC or 200-270 VAC switch selected, 60/50 Hz. 15 watts. **Dimensions:** 5⅜" H x 15" W x 11½" D.



New

Heathkit IG-1272 Low-Distortion Audio Frequency Oscillator

$139.95

- *Super-low distortion*
- *Flat output across entire range*
- *Frequency from 5 Hz to 100 kHz*

The Heathkit IG-1272 provides a low-distortion sine wave output over a frequency range from less than 5 Hz to 100 kHz. It's perfect for the testing requirements of the serious audiophile, audio service shop or the audio designer.

Pushbuttons select the first three significant digits of the desired frequency and also control the frequency multiplier and output attenuator. The IG-1272 can also be operated in a continuously-variable frequency mode. A level meter on the front panel allows accurate monitoring of the output.

A BNC output connector helps keep noise level approximately 70 dB below signal output level. A buffered sync signal, for use with an oscilloscope or frequency counter, is available at the rear panel BNC. Includes cable, BNC, and clip leads.

The IG-1272 is one of our easiest-to-build kits too. Most components, including pushbutton switches, mount directly to the printed circuit board, greatly reducing point-to-point wiring. Put the IG-1272 in your shop or on your hobby bench today, you'll find it a really versatile addition to your test setup!

Kit IG-1272, Shpg. wt. 12 lbs. **139.95**

Factory assembled version of above.

SG-1272, Shpg. wt. 12 lbs. **200.00**

IG/SG-1272 SPECIFICATIONS: **Output Voltage:** .003 to 10 volts RMS. **Output Load:** 600 ohms. **Hum and Noise:** .01% or less. **Frequency Range:** 5 Hz to 100 kHz. **Output Flatness (referenced to meter) Pushbutton Mode:** Within ±1.1 dB from 5 to 20 Hz; within ±.2 dB from 20 Hz to 100 kHz. **Output Flatness (referenced to meter) Variable Mode:** Within ±2.5 dB from 10 Hz to 100 kHz. **Frequency Accuracy:** Pushbuttons; ±4%, ±1 Hz, typical ±1.5%. Variable; Depends on accuracy of counter being used. **Distortion:** 10 to 40 Hz; .1% or less. 40 Hz to 20 kHz; .04% or less. 20 kHz to 100 kHz; Rises to .1% at 100 kHz. **Attenuation:** Pushbutton combination selected, 10 to 70 dB. Attenuation Accuracy; ±.2 dB. Selector Accuracy; ±1 Hz ±4%. **Power Requirement:** 120 VAC or 240 VAC, 50 or 60 Hz. 10 watts maximum. **Dimensions:** 5½" H x 11" W x 12⅓" D. **Weight:** 9.5 lbs.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

you Professional Performance at low cost

Heathkit IM-5238 deluxe AC Voltmeter for fast, easy audio equipment service

$99.95 Kit

- *Linear scales for both volts and dB make readings easy and accurate*
- *High sensitivity 0-1 mV full-scale range for low-voltage measurements*
- *Excellent frequency response of 10 Hz to 1 MHz*
- *Wide dynamic range for less switching*

The Heathkit IM-5238 AC voltmeter has the features and performance of assembled units costing more than twice as much, and it's the ONLY AC voltmeter available that combines LINEAR voltage and dB scales in a single, compact unit!

AC volts are measured in 12 ranges from 0-1 mV to 0-300 VAC. High sensitivity and a full-scale 0-1 mV range make it ideal for extremely low AC voltage measurements; its wide frequency response is excellent for a variety of AC voltage measurements. Measures phono cartridge, amplifier and tuner outputs, power supply ripple and noise, audio generator outputs, power line voltage, gain, much more.

The linear dB scale provides less crowding of divisions, so there's no dropoff in resolution when reading at the low end. dB measurements can be made from −70 to +40 dB in 12 ranges. The meter is calibrated to read standard dBm (0 dBm=1 mW into 600 ohms=0.775 V rms). A dB offset control changes the reference voltage over a 10 dB range, so you can set any reference voltage you need.

Rear panel outputs proportional to both voltage and dB permit the IM-5238 to be used with a sweep generator and X-Y recorder to automatically plot frequency response of audio and other equipment.

Has pushbutton function switches, range selector and dB offset control, power-on switch and pilot light, rear panel amplified AC output. Front panel five-way binding posts accept almost all types of input cables for easy and convenient hookup.

Kit IM-5238, Shpg. wt. 8 lbs. **99.95**

Factory assembled and calibrated version of above.
SM-5238, Shpg. wt. 8 lbs. **135.00**



IM-5238 SPECIFICATIONS: **Voltage Range (full scale):** 1 millivolt to 300 volts AC, 12 ranges. **Decibel Range:** −70 dB to +40 dB, 12 ranges in 10 dB steps with variable offset. **Input:** 10 megohms, 30 pF, negative input grounded to chassis. **Frequency Response:** Voltage Range, 10 Hz to 1 MHz, ±2 dB. 10 Hz to 500 kHz ±1 dB. dB range, 10 Hz to 250 kHz ±1 dB. **Outputs:** DC (proportional to input volts), 1 volt full scale. DC (proportional to log of input volts), 3 volts full scale. AC (amplified output), 1 volt peak, full scale. **Scales:** 0-10 volts; 0-3.16 volts; −20 to +10 dB. **Accuracy:** Voltage Ranges, 4% of full scale at 1 kHz plus accuracy of calibration standard. dB ranges, ±0.5 dB at 1 kHz plus accuracy of calibration standard. **Temperature Range:** +10° C to +40° C. **Power Requirement:** 100-135 VAC, 200-270 VAC, 50/60 Hz, 20 watts. **Dimensions:** 5⅝" W x 6¾" H x 10⅞" D. **Net Weight:** 5.5 lbs.

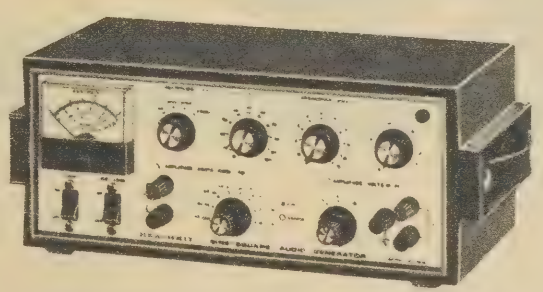
Sine-Square Wave Audio Generator with frequency range to 100 kHz

$89.95 Kit

- *Sine wave output from 1 Hz to 100 kHz*
- *Square wave output from 5 Hz to 100 kHz*
- *Simultaneous or independent outputs*

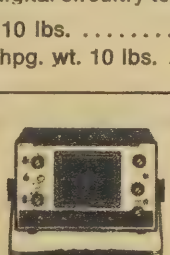
The IG-5218 is ideal for gain and frequency response measurements in audio amplifiers, as a signal source for harmonic distortion measurements or as an external modulator for RF signal generators. Sine wave signal distortion is less than 0.1% from 10 Hz to 20 kHz. A meter, calibrated in both volts and dB, monitors the sine wave output. Peak-to-peak square wave output levels are 0.1 V and 10 V into a load of 2000 ohms or greater. Risetime is only 50 nanoseconds making the IG-5218 ideal for checking audio amplifier response or for use as a trigger for digital circuitry testing.

Kit IG-5218, Shpg. wt. 10 lbs. **89.95**
Assembled SG-5218, Shpg. wt. 10 lbs. **165.00**



IG-5218 SPECIFICATIONS: **SINE WAVE OUTPUT: Output voltage:** 8 ranges, 0.003 to 10 V rms (full-scale) with 10 k ohm or higher external load. 6 ranges, 0.003 to 1 V (full scale) with 600 ohm internal or external load. **dB ranges:** −62 dB to +22 dB, −12 dB to +2 dB on meter and −50 to +20 dB on amplitude switch in 10 dB steps. +2 dB max. into 600 ohm load. (0 dB=1 mW in 600 ohm). **Output variation:** +1 dB 10 Hz to 100 Hz. **Output impedance:** 10 V range: 0-1000 ohm; 3 V range: 800-1000 ohm; 1 V range and lower; 600 ohm. **Meter accuracy:** ±10% of full scale with proper load termination. **Output impedance:** 0.1 V and 1 V ranges: 52 ohm; 10 range: up to 220 ohm. **Power requirement:** 105-125 or 210-250 VAC, 60/50 Hz, 6 watts.

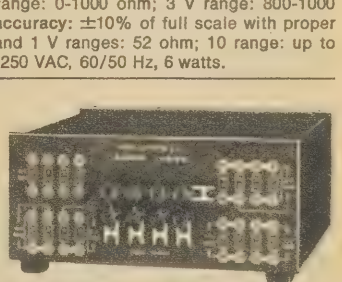
Deluxe Servicing Oscilloscope



The IO-4550 dual-trace, DC to 10 MHz scope is ideal for any audio service use. Dual-trace capability lets you compare inputs and outputs, wide DC-10 MHz bandwidth permits accurate measurements on all types of audio equipment.

See index under oscilloscopes.

NEW! Heathkit Audio Load

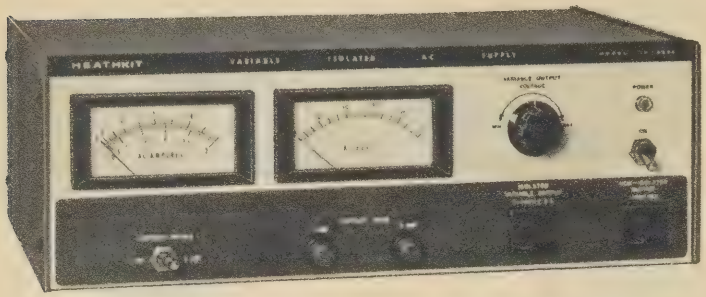


Another Heathkit first! The ID-5252 is a must for audio service technicians, manufacturers, and the serious audiophile alike. It provides the correct loading required for audio amplifiers under test in accordance with manufacturers published specifications and the Institute of High Fidelity Manufacturers (IHFM). Eliminates "special order" load resistors for each amplifier you want to test. Provides audio loads of 2, 4, 8, 16 or 32 ohms depending on the connections made at the five-way binding posts. Jacks are provided for connecting a voltmeter, oscilloscope or other test instrument at the load in use. Includes test leads.

Kit ID-5252, Shpg. wt. 6 lbs. **49.95**

ID-5252 SPECIFICATIONS: **Available loads (all resistors 1% tolerance):** four 8-ohm, 60 W; two 16-ohm, 120 W; one 32-ohm, 240 W; one 2-ohm, 240 W; one 8-ohm, 240 W. **Reactance:** Less than 10% at 100 kHz. **Leads:** four 3-ft. #12 gauge leads, spade lugs, four jumper links. **Dimensions:** 4" H x 9" W x 9" D.

Power Supplies for your Test and Design needs



Heathkit IP-5220 Variable Isolated AC Supply

$119.95

- *Variable 0-140 VAC output*
- *1 A & 3 A ammeter ranges for easy low-current readings*
- *Simultaneous metering of voltage and current output*

This variable AC source provides complete isolation between the AC power line and any electrical equipment that is plugged into its front panel variable output socket. The variable 0-140 volt output is useful anywhere a slow run-up of line voltage is needed. A full 360 volt-amperes of AC power is available at the front panel variable output socket. More than enough to operate equipment with large power requirements. And the IP-5220 is capable of supplying its full-rated output continuously. The IP-5220's ability to start from zero voltage is helpful when trying to locate circuit faults caused by high or low line voltage — or testing equipment with unknown power requirements. You simply monitor the output on the large voltmeter and ammeter as output voltage is increased. When excessive current is observed, power can be quickly and easily removed before components are damaged.

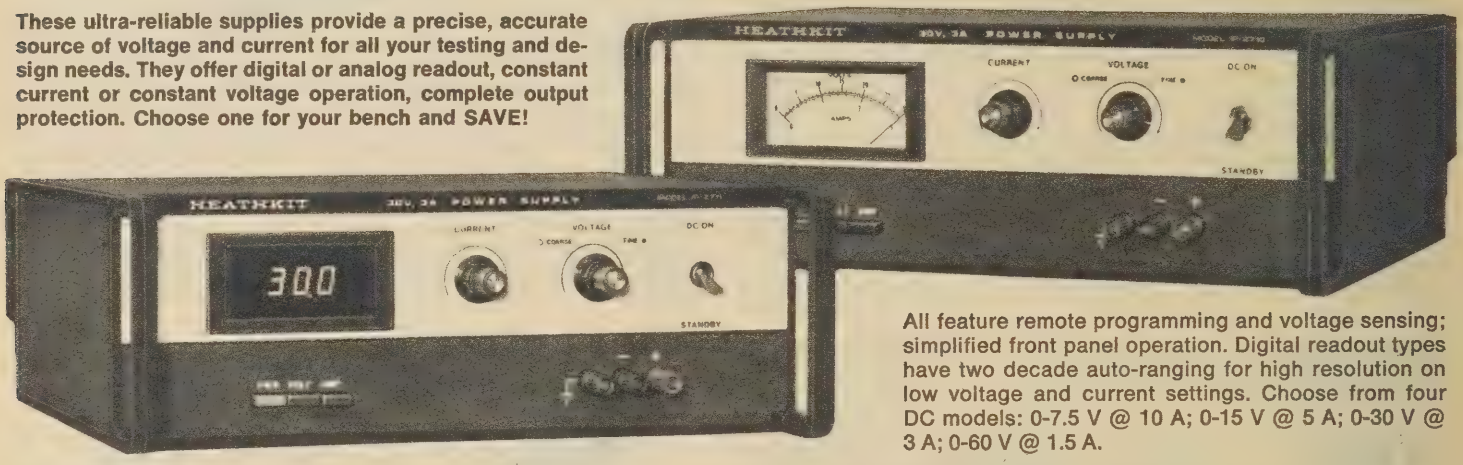
Switch-selected 1A and 3A ranges are fused individually on the front panel. Fused variable output socket protects the IP-5220 and the circuit under test.

Kit IP-5220, Shpg. wt. 28 lbs. **119.95**

IP-5220 SPECIFICATIONS: **Input Voltage:** 120 V @ 60 HZ for specified output. **Output Voltage:** 0-140 V @ 60 Hz. **Voltmeter Range:** 0-150 VAC. **Ammeter Ranges:** 0-1 & 0-3 A, AC. **Output Current:** 3 A max. 10 A (direct line connection). **Output Power:** 360 Volt-Amperes maximum. **Dimensions:** 5.5″ H x 15″ W x 10.5″ D.

Precise, Reliable 2700 Series Power Supplies

These ultra-reliable supplies provide a precise, accurate source of voltage and current for all your testing and design needs. They offer digital or analog readout, constant current or constant voltage operation, complete output protection. Choose one for your bench and SAVE!



All feature remote programming and voltage sensing; simplified front panel operation. Digital readout types have two decade auto-ranging for high resolution on low voltage and current settings. Choose from four DC models: 0-7.5 V @ 10 A; 0-15 V @ 5 A; 0-30 V @ 3 A; 0-60 V @ 1.5 A.

Kit IP-2701, 60V @ 1.5A digital, Shpg. wt. 40 lbs. **119.95**

Kit IP-2710, 30V @ 3A analog, Shpg. wt. 34 lbs. **169.95**

Assembled SP-2710, 30V analog, Shpg. wt. 34 lbs. **245.00**

Kit IP-2711, 30V @ 3A digital, Shpg. wt. 36 lbs. **219.95**

Assembled SP-2711, 30V digital, Shpg. wt. 36 lbs. **330.00**

Kit IP-2720, 15V @ 5A analog, Shpg. wt. 34 lbs. **99.95**

Assembled SP-2720, 15V analog, Shpg. wt. 32 lbs. **130.00**

Kit IP-2730, 7.5V @ 10A analog, Shpg. wt. 36 lbs. **79.95**

Assembled SP-2730, 7.5V analog, Shpg. wt. 34 lbs. **100.00**

Kit IP-2731, 7.5V @ 10A digital, Shpg. wt. 38 lbs. **99.95**

Assembled SP-2731, 7.5V digital, Shpg. wt. 35 lbs. **130.00**

IP/SP-2700 SERIES SPECIFICATIONS: **Max. Rated Output:** Models IP/SP-2700 & 2701; 60V, 1.5A; models IP/SP-2710 & 2711: 30V, 3A; models IP/S-2720 & 2721: 15V, 5A; models IP-2730 & 2731: 7.5V, 10A. **Load Regulation:** Voltage: ±0.05% +1 mV, Current: ±0.10% +3.5 mA. **Line Regulation:** Voltage: ±0.05% +1 mV. Current: ±0.10% +1 mA. **Ripple & Noise:** Voltage: 1 mV RMS; 0.03% of rated output, peak-to-peak. **Voltage/Current Readout (Switchable):** Analog: 3½″, 100°, meter. Digital: 3½-digit (1999), two-decade, auto-ranging, digital meter. **Readout Accuracy:** Voltage: Analog ±3% of rated output; Digital ±0.5% of reading ±1 count using lab standards, ±1.0% of reading ±1 count using built-in calibrator. Current: Analog — ±3% of rated output; Digital — ±1.0% of reading ±4 count using lab standards, ±1.5% of reading ±4 count using built-in calibrator. **Readout Repsonse Time: (Digital):** 2 seconds to within 5 counts. **Stability at Output Terminals:** Voltage: ±(0.01% + 1 mV)/hr. Current: ±(0.05% + 1 mA)/hr. **Stability as Displayed (Digital):** Voltage: ±(0.01% + 1 mV + ½ count)/hr. Current: ±(0.01% + 1 mA + ½ count)/hr. **Operating Modes:** Constant voltage, constant current, auto-series, auto parallel. **Programming Mode:** Voltage: A — zero to rated output with 0 to 5.0 VDC applied; B — zero to rated output with 0 to 5000Ω external resistor. Current: Zero to rated output with applied voltage of 1.0 volt/amp (0.1 volt/amp for IP-2731). Programming transient response: 0.1 ms for low current to high current changes: 1.0 ms for high to low. Load resistance less than 10 x (E Rated/IRated). **Power Requirements:** 120/240 ± 10/20 VAC; 60/50 Hz, 2.0/1.0 Amps max. **Overall Dimensions:** 5.5″ H x 15″ W x 13.5″ D. (NOTE: Specs measured in accordance with NEMA standards (PYI-1972) after 30-minute warmup period.)

Low-cost Strip Chart Recorder

Has 1 mV or 10 mV full-scale input (selected during assembly); twelve chart speeds from 5 sec./in. to 200 min./in. Power, servo and chart switches, coarse and fine zero controls, high impedance, floating input. Zener regulated reference voltage supply. Less than 1% error, full scale. For 120/240 VAC, 60/50 Hz. 6″ H x 15″ W x 9⅛″ D.

Kit IR-18M, Shpg. wt. 15 lbs. **199.95**

3 rolls chart paper (140 ft./roll). **IRA-18-1,** Shpg. wt. 5 lbs. **11.95**



$199.95

120 ft. roll chart paper. (For slow speeds.) **SU-445-17,** 2 lbs. **4.75**

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Versatile easy-to-use Heathkit Power Supplies



Tri-Output Experimenter's Power Supply

$89.95

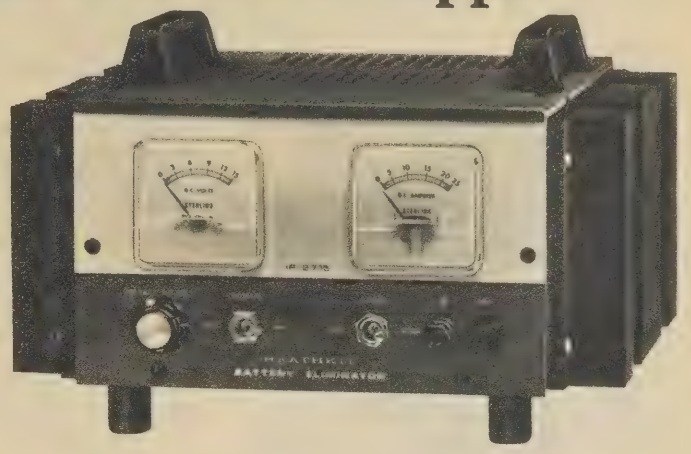
Three floating outputs can be connected in any combination for a wide variety of output voltage and current capability

Combines 5 VDC fixed output with two 0-20 VDC variable outputs in a single, compact supply ideal for experimenters. The 0-20 variable outputs can be tracked — one will "follow" the other at any specified voltage difference — ideal for analog circuits requiring a + and − voltage. The 5-volt output is useful for digital circuits. All outputs are short-circuit proof, with current limiting. They can be operated independently, in series, or in parallel. Switchable front panel meter monitors all outputs.

Kit IP-2718, Shpg. wt. 12 lbs. **89.95**

Assembled SP-2718, Shpg. wt. 12 lbs. **155.00**

IP-2718 SPECIFICATIONS: **Outputs:** 5 volts DC ±5% at 1.5 A. Two 0-20 VDC at 0.5A, continuously adjustable. **Regulation: Load:** less than 0.1% variation from no load to full load on 20-volt supplies; less than 2% variation from no load to full load on 5-volt supply. **Line:** less than 0.2% variation for line voltage change of 10 volts on 20 volt supplies: less than 0.15% variation for line voltage change of 10 volts on 5-volt supply. **Power Requirement:** 100-135 VAC or 200-270 VAC, 60/50 Hz, 100 watts full load. **Dimensions:** 4½″ H x 10¾″ W x 9″ D.



Heavy-Duty Power Supply/Battery Eliminator

$149.95

Provides variable 9-15 volt output capable of 12 amps continuous, 20 amps intermittent

Heavy-duty supply gives you the steady and accurate power output you NEED for reliable Ham and CB radio servicing, any high-current 12-volt use. Features negligible ripple; excellent regulation from no load to full load. Has double heat sinks with 4 output transistors, extra-large transformer for steady smooth power. Two large, easy-to-read front panel meters provide accurate monitoring of voltage and current. Rugged metal case with carrying handles.

Kit IP-2715, Shpg. wt. 31 lbs. **149.95**

IP-2715 SPECIFICATIONS: **Output Voltage:** variable from 9-15 VDC. **Output Current:** 12 amps continuous, 20 amps intermittent (per derating curve in manual). **Ripple:** less than 1% at full load. **Regulation:** less than 2% variation from no load to full load. **Fuses:** 7A, 3 AG slow-blow primary; 20A, 3 AG output. **Power Requirements:** 110-130 VAC, 7A or 220-260 VAC, 3.5 A, 60/50 Hz. **Dimensions:** 5¼″ H x 11″ W x 11″ D.

Convenient Laboratory Breadboard

- ***Perfect for prototyping/ experimenting***
- ***Solderless sockets***
- ***Built-in power supply***



$89.95

The ET-3300 Laboratory Breadboard makes basic circuit designing and prototyping a breeze. No more loose wires and components. Solderless sockets and a built-in power supply make hook-up and teardown quick and easy. It can even be used to test electronic components. You'll find dozens of other uses for it.

Features three dual ground and power bus strips. Four breadboarding sockets, each equipped with 48 dual rows of common connection points. Holds up to twenty-four dual in-line 14-pin IC's. Accommodates both discrete components and integrated circuits and its solderless connectors accept up to #20 solid wire.

Kit ET-3300, Shpg. wt. 6 lbs. **89.95**

Assembled ETW-3300, Shpg. wt. 6 lbs. **130.00**

ET-3300 SPECIFICATIONS: **OUTPUTS:** +5 VDC @ 1.5 amps; +12 VDC @ 100 mA; −12 VDC @ 100 mA. **REGULATION: Load:** Less than 2% variation from no load to full load on all supplies. **CURRENT LIMITING:** Fixed current limiting of each supply at rated current provides short-circuit protection. **POWER REQUIREMENT:** 120/240 VAC 60/50 Hz 30 watts at full load. **SIZE:** 3½″ H x 12″ W x 12″ D.

1-15 VDC Regulated Power Supply

Perfect for serving, testing or designing transistor radios, portable tape recorders and other low-voltage solid-state devices. Continuously adjustable 1-15 VDC at 500 mA output, 500 mV line and load regulation and fully adjustable current limiting. AC or DC programming capability lets you control output voltage from another source. Three-terminal "floating" output gives positive and negative voltages.



Kit IP-2728, Shpg. wt. 5 lbs. **27.95**

IP-2728 SPECIFICATIONS: **Ripple and Noise:** Less than 5 mV. **Current Output:** 500 mA maximum continuous load. **Current Limiting:** Adjustable from 10 mA to over 500 mA. **Transient Response:** 25 microseconds. **Output Impedance:** .5 ohm or less to 100 kHz. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 W at full load. **Dimensions:** 4⅜″ H x 5½″ W x 5¾″ D. **Programming:** AC or DC, 5000 ohm input resistance.

0-400 VDC General-Purpose Power Supply

This versatile supply provides 0-400 VDC at 0-100 mA continuous (125 intermittent) with excellent line and load regulation. Has front panel voltage and current meters and built-in circuit protection. Binding posts are insulated from chassis to allow positive or negative high voltage and bias operation. Wt. 19 lbs.

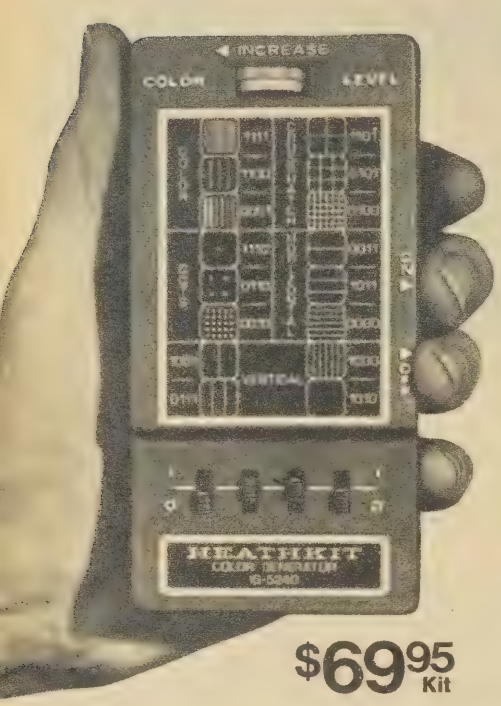


Kit IP-2717 ..... **104.95**

Assembled SP-2717 ..... **170.00**

IP-2717 SPECIFICATIONS: **Additional Outputs:** 0 to −100 VDC at 1 mA variable bias voltage, 6.3 VAC at 4 amps., 12.6 VAC at 2 amps. (25 VA max. AC load), filament voltage. **Regulation:** Output variation less than 1% from no load to full load. **Ripple:** Less than 10 millivolts rms. **Output Impedance:** Less than 10 ohms, DC to 1 MHz. **Meters:** Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 mA. **Power Requirement:** 120/240 VAC, 60/50 Hz, 150 W max. **Dimensions:** 5⅛″ H x 13¼″ W x 11″ D.

Let Heath help you make color TV servicing easier



$69.95 Kit

"Shirt-Pocket" size portable color Alignment Generator

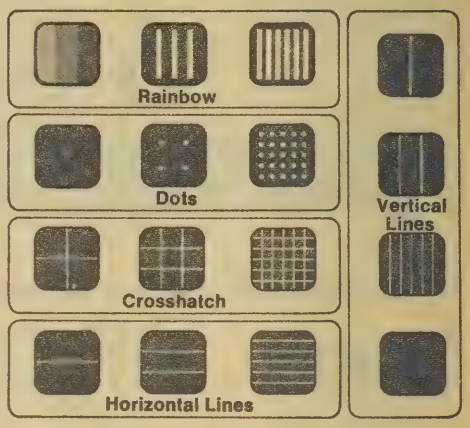
Has the versatility you NEED for complete color TV alignment and convergence — plus a special battery saver circuit for added efficiency

The IG-5240 offers outstanding performance, with crystal-controlled carrier and color oscillator for real precision, accuracy and stability. It's a versatile, low-cost service tool for hobbyist and technician alike. Simply connect its output cable to the VHF terminals of any color TV. The RF carrier frequency is calibrated for channel 4. An "on" pushbutton turns the IG-5240 on, four program slide switches select any of the 16 displays available. A color level control adjusts the color intensity of the three color patterns. A special "battery saver" timing circuit turns the display "off" automatically after a minimum of five minutes "on" to conserve battery power. The unit uses two inexpensive 9-volt transistor batteries (NEDA #1604 or equivalent), which provide a minimum of 8 hours continuous operation. Less batteries.

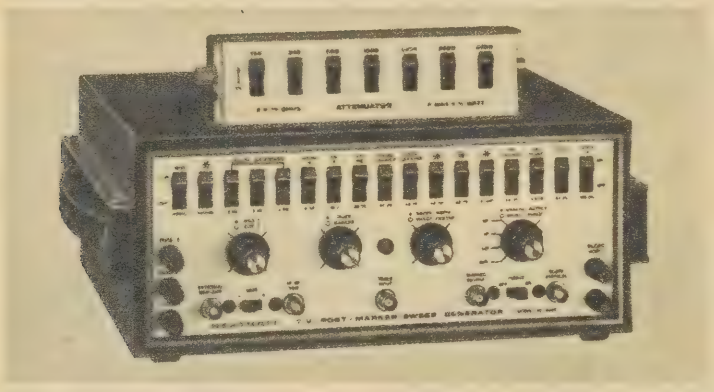
Kit IG-5240, Shpg. wt. 2 lbs. **69.95**

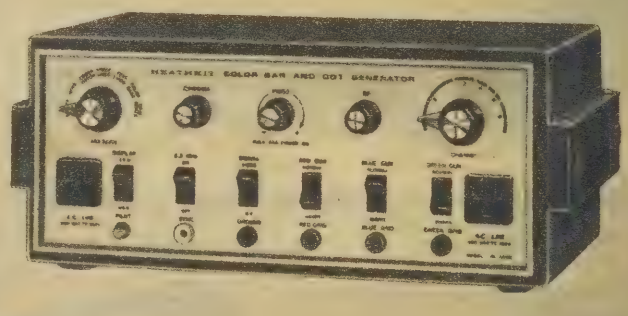
Factory assembled version of above.

SG-5240, Shpg. wt. 2 lbs. **90.00**



IG/SG-5240 SPECIFICATIONS: **Chroma Carrier:** 3563.795 kHz ±0.005% crystal-controlled. **Master Timer:** 377.616 kHz ±0.005% crystal-controlled. **RF Carrier:** Channel 4, 67.250 MHz ±0.005% crystal-controlled. **RF Output Level:** 5000 μV min. into 300 ohms. **Video Modulation:** 50% (approx.) **On-Time Interval:** 5 minutes min. OFF pushbutton can override time out. **Power Requirement:** Two 9-volt transistor batteries; with 180 mAH capacity (NEDA #1604). **Dimensions:** 5.4″ L x 2.75″ W x 1.15″ D.





Heathkit Post-Marker/Sweep Generator for easy, thorough alignment jobs

Checks overall receiver response from the antenna terminals throughout the tuner, IF strip video detector, to the color bandpass amplifier outputs. Sweep modulated picture carriers are available at 45.75 MHz for the tuner mixed input and at 67.25 MHz for the antenna terminal input. And the exclusive Heath external attenuator enables you to accurately set bandwidth in seconds... eliminates guessing at important 6 dB points. Fifteen crystal-controlled markers are provided ...four for color bandpass... one for FM-IF... eight for TV IFs from 39.75 to 47.25 MHz... plus picture and sound carrier markers for channels 4 and 10. Accurate location of picture and sound carriers, 6 dB points and trap locations is a breeze with the IG-57A. Three sweep oscillators in stable Colpitts configurations produce five ranges using harmonics for color bandpass, FM IF, video IF bandpass, VHF channels 4 & 10. Uses quick-disconnect BNC connectors for easy setup. Includes 4 coax cables, 4 test leads and a demodulation probe.

Kit IG-57A, Shpg. wt. 15 lbs. **179.95**

IG-57A SPECIFICATIONS: **Marker frequency:** 100 kHz. **Marker frequencies, crystal-controlled:** 3.08, 3.58, 4.08, and 4.50 MHz ±0.1%. 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, 67.25 and 193.25 MHz ±.005%. **Modulation frequency:** 400 Hz. **Input impedance:** External Marker/Sweep, and Attenuator — 75 ohms. Trace in — 220 k ohms. **Output impedance:** Marker Output, Sweep Output, and Attenuator — 75 ohms. Scope Vert. — 1 k ohms. **Bias voltage:** Two individually adjustable supplies: Positive or negative polarity. **Sweep frequency ranges:** LO Band — 2.5 to 5.5 MHz ±1 dB. IF Band — 38 to 49 MHz ±1 dB. RF band — 64 to 72 MHz ±1 dB. **Attenuator:** Total of 70 dB in seven steps. **Power requirement:** 120 V, 60 Hz AC at 4.5 watts.

Color Bar Pattern Generator with 3x3 or standard 9x9 display

Provides 12 patterns plus a clear raster for purity adjustments. Has RF output for channels 2 through 6, variable up to 50,000 μV, variable plus and minus going video, front panel gun shorting switches and lead piercing grid jacks, front panel sync output, 4.5 MHz sound carrier oscillator, two 500W AC receptacles.

Kit IG-5228, Shpg. wt. 8 lbs. **99.95**

IG-5228 SPECIFICATIONS: **Output signals:** Video — Greater than ±1 V peak-to-peak composite signal. RF — Variable to 50,000 μV output, channels 2 through 6. Sync. — Greater than 3.5 V peak-to-peak signal. Control Grids (3) — Individual red, blue, and green control grid signals for viewing chroma signal demodulator phase adjustments. **Power supply:** full wave zener diode regulated. Input — 120/240 VAC, 60/50 Hz. Output —3.6 VDC, 500 mA, zener diode regulated. **Dimensions:** 5½″ H x 13½″ W x 8″ D.

Heathkit 40 kV High-Voltage Probe Meter



Makes TV tube voltage measurements fast and convenient. Measures DC voltages up to 40 kV with ±3% accuracy. The on-off switch on the handle protects the meter during hookup and when the probe is not in use. Easy operation, easy assembly. 1½″ H x 1⅞″ W x 15″ D.

Kit IM-5210, Shpg. wt. 1 lb. **21.95**

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

and faster than ever

Heathkit IT-5230 CRT Tester/Rejuvenator brings old and worn TV Picture Tubes back to LIFE!

$99.95

- *Tests IN-LINE GUN Color CRT's*
- *Individual meters for each color gun*
- *Clean and rejuvenate modes for each gun*
- *Heater/Cathode short indicator*

At last, a deluxe CRT tester/rejuvenator priced within reach of most any service shop, and it performs as well as models costing up to three times as much! The IT-5230 will help you test, rejuvenate and clean almost all popular CRT's, *including the new IN-LINE GUN CRT's.* Features simplified pushbutton operation for all test, rejuvenation and cleaning operations, individual grid current meters for each color gun, a separate heater voltage meter to allow precise settings of heater voltage on the CRT. Has lamp to indicate shorts in the CRT, heater voltage and cutoff controls. A special GUN REL/LIFE pushbutton provides an indication of the life remaining in the tube. The restore indicator glows brighter as the rejuvenating current level is increased for an easy visual indication of rejuvenation. Transformer power supply assures safe, reliable operation even at low line voltages. Put the IT-5230 on your bench or in your shop today. You'll find it to be an invaluable service tool that will pay for itself after a few months use.

Kit IT-5230, Shpg. wt. 9 lbs. **99.95**

Factory Assembled version of above.

ST-5230, Shpg. wt. 9 lbs. **155.00**

IT-5230 SPECIFICATIONS: **Sockets Supplied:** 14-pin for 90° color tubes; 13-pin for in-line color tubes; 8-pin for black-and-white tubes; 7-pin for black-and-white tubes. **Heater Supply Voltage:** Variable from 2 volts to 12 volts at 1 ampere. **Test Cables Supplied:** 4′ heavy duty. **Power Requirement:** 105-135 VAC, 60/50 Hz (50 watts maximum at 60 Hz). **Dimensions:** 5.12″ high x 10″ deep x 13.5″ wide.



Heathkit IO-4101 Vectorscope/Color Generator

$159.95

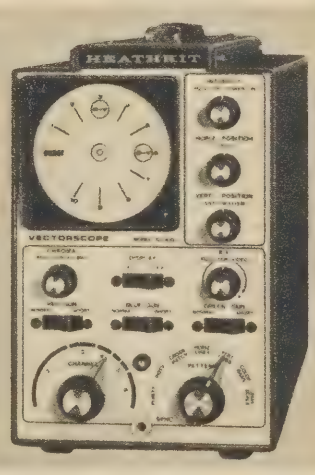
Combines a vectorscope and color bar generator for fast, easy and thorough color TV servicing

Has a vectorscope to display the chroma signal being fed to the CRT guns; a color bar pattern generator to provide 12 display patterns (in standard 9x9 format or exclusive Heath 3x3 format) plus a raster for purity adjustments. Helps you find missing or weak color; shows proper adjustment of burst phase transformer, 3.58 MHz oscillator, reactance coil, bandpass transformer, color demodulation angle. Has tuning for channels two through six, RF output variable to 50,000 μV, plus or minus going video signals, front panel sync output, 4.5 MHz crystal-controlled sound carrier. Lead-piercing grid jacks and front panel gun shorting switches.

Kit IO-4101, Shpg. wt. 13 lbs. **159.95**

IO-4101 SPECIFICATIONS: **PATTERNS — Purity:** Snow-free raster. **Dots*:** 9x9 (110 small dots.) 3x3 (9 dots). **Crosshatch*:** 9x9 (11 vertical and 10 horizontal lines.) 3x3 (3 vertical and 3 horizontal lines.) **Horizontal lines*:** 9x9 (10 horizontal lines.) 3x3 (3 horizontal lines.) **Vertical lines*:** 9x9 (11 vertical lines.) 3x3 (3 vertical lines.) **Color bars*:** 9x9 (ten standard color bars.) **Gray scale:** Six shades of brightness. **OUTPUT SIGNALS — Video:** Greater than ±1 volt p-p composite signal for composite signal injection beyond the video detector. **Sync:** Greater than 3.5 volts p-p. **Power requirement:** 105-125 or 210-250 VAC, 60/50 Hz, 20 Watts. **Dimensions:** 9¼″ H x 6¾″ W x 14½″ D.

*The number of dots, lines, and bars indicated for a 9x9 display is the number displayed if the receiver under test has no overscan.



Heathkit IT-3117 low-cost, easy-to-use Tube Checker

$109.95

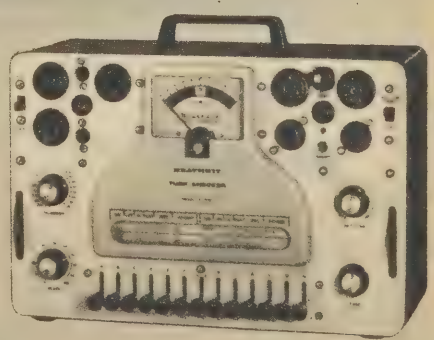
A BASIC service instrument for anyone working on tube-type TV, hi-fi or radio equipment

Essential for radio-TV servicing! Tests tubes on the basis of total emission, for shorts, leakage, open elements, and filament continuity. Has good-?-bad indicator to show relative quality, neon bulb indicator for filament continuity and leakage or shorts between elements. Easy-to-operate thumbwheel roll chart makes locating tube types fast and easy. Positive-action toggle switches for easy test setups.

Kit IT-3117, Shpg. wt. 12 lbs. **109.95**

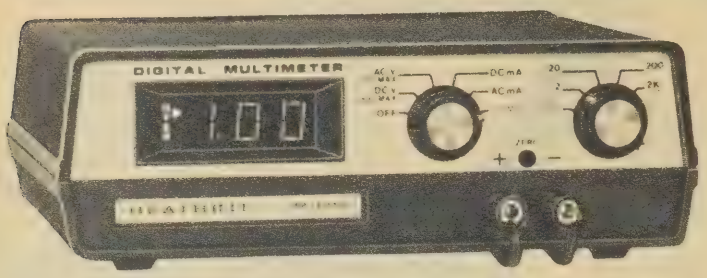
Updated Tube Chart Subscription Service for all Heathkit Tube Checkers includes new data book plus two supplements per year for only $6.85. Write: Heath Tube Data Service, P.O. Box 377, Hewlett, Long Island, New York 11557.

IT-3117 SPECIFICATIONS: **Sockets:** 4-pin, 5-pin, 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. **Meter:** 1 mA BAD-?-GOOD scale, illuminated. **Line Voltage Adjustment:** Step type. **Roll Chart Mechanism:** Constant tension, free-rolling, thumbwheel operation, illuminated. **Filament Voltage:** .63, 1.4, 2, 2.35, 2.5, 3.15, 4.2, 4.7, 5, 6.3, 7.5, 9.45, 12.6, 19.6, 25, 32, 50, 70, 110 VAC. **Element Test Voltages:** 30, 100, 250 VAC. **Power Requirement:** 120 VAC, 50/60 Hz. **Dimensions:** 8½″ H x 13″ W x 5½″ D.



47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Heathkit DMM's—Easy to read and Accurate!



Our lowest cost bench Digital Multimeter

Here's a low-cost, high performance DMM that hams, hobbyists and service techs have been waiting for. Its full-function capability even includes AC voltage measurements up to 700 volts. Has four overlapping AC & DC voltage & current ranges and five resistance ranges. And it's hard to find better accuracy at a price this low: 1% on DC volts, 1½% on AC volts and AC/DC current, and 1½% on resistance. Lighted front-panel indicators show overrange, + and — DC voltages and current at a glance.

A solid-state design uses IC circuitry for a clear non-blanking 2½-digit display with automatic decimal positioning. It's ease of operation makes it a pleasure to use for both beginners and advanced technicians. The easy assembly makes it a great project for student electronics labs. And the exclusive Heath built-in calibration standards are all that's needed for initial and periodic adjustments.

Features overload protection on all ranges, 120 or 240 VAC operation, isolated floating ground, attractive heavy-duty case to withstand rugged use, universal banana jack inputs for easy testing of all types of electronic equipment.

Kit IM-1210, Shpg. wt. 5 lbs. **69.95**

Factory assembled and calibrated version of above.

SM-1210, Shpg. wt. 5 lbs. **100.00**

IM-1210 SPECIFICATIONS: Functions: DC volts, DC current, AC volts, AC current, Ohms. **Ranges (Full-Scale):** DC volts: 0-2, 20, 200, 1,000 V; DC current: 0-2, 20, 200, 2,000 mA; AC volts: 0-2, 20, 200, 700 V rms (50 Hz to 10 kHz). AC current: 0-2, 20, 200, 2,000 mA rms (50 Hz to 10 kHz). Ohms: 0-200, 2K, 20K, 200K, 2M ohms. **Overrange:** 25% on all functions, within maximum input limits. **Maximum Input:** 3 amperes into AC or DC mA, and Ohms (fuse protected). 700 VAC rms into Volts (except 2V range: 250 VAC rms). 1000 VDC into Volts (except 2V range; 350 VDC). "—" input may be floated 1000 VDC (700 VAC) above earth ground. **Resolution (Low Range):** Volts: 10 mV. Current: 10 μA. Ohms: 1 ohm. **Display:** 2½-digit, 7-segment, planar, LED (light emitting diode) with overrange and negative-input indicators. **Accuracy (Full Scale, ±1 Digit):** DC volts: ±1%. DC current: ±1.5%. AC volts: ±1.5%. AC current. ±2%. Ohms: ±1.5%. **Input Impedance:** 1 megohm on all voltage ranges. 2.1-volt drop maximum on current ranges (except 2.5-volt drop on 2,000 mA range). **Sample Rate:** Line frequency. **Display Settling Time:** Less than 1.0 seconds on DC volts and DC current, and less than 3.0 seconds on AC volts, AC current, and ohms; to within 5 counts. **Power Requirements:** 100-135 VAC, 200-270 VAC 50/60 Hz, 8 watts. **Fuse Requirements:** Input: 3AG, 3-ampere. Line: 3AG, ¼-ampere slow-blow. (⅛-ampere slow-blow for 240 VAC.) **Dimensions (overall):** 3.00″ H x 8.69″ W x 10.54″ D. (7.62 cm high, 22.07 cm wide, 26.77 cm deep.) **Weight:** 3.3 pounds (1.5 kg). **NOTE:** Specifications are based on 30-minute warmup.



Portable lab-grade Digital Multimeter

26 ranges — measures AC and DC volts, DC current and resistance. True professional performance at a low-kit form price!

Kit IM-2202, Shpg. wt. 7 lbs. **199.95**

IM-2202 SPECIFICATIONS: **DC VOLTAGE — Range/Input Impedance:** 100.0 mV/50 MΩ, 1,000 V/500 MΩ, 10.00 V/10 MΩ, 100.0 V/10 MΩ, 1000 V/10 MΩ. **Overload Capability:** 300 V on 100 mV & 1 V ranges; 1000 V on 10 V & 1000 V ranges. **Accuracy:** Built-in references, ±0.5%, ±1 digit. Laboratory standards, ±0.2%, ±1 digit. **AC VOLTAGE — Range/Input Impedance:** 100.0 mV/10 MΩ-120 pF, 1.000 V/10 MΩ-120 pF, 10.00 V/10 MΩ-60 pF, 100.0 V/10 MΩ-60 pF, 750 V/10 MΩ-60 pF. **Overload Capability:** 250 V on 100 mV & 1 V ranges; 750 V on 10 V, 100 V & 750 V ranges. **Accuracy:** Built-in references...±1.0%, ±3 digits; 40 Hz to 1 kHz (except 40 Hz to 10 kHz on 100 m and ranges). Laboratory standards...±0.5%, ±3 digits; 40 Hz to 2 kHz on 750 range). **DC CURRENT — Range/Voltage Drop:** 100.0 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±.5%, ±1 digit (except ±1%, ±1 digit on 1000 mA range). Laboratory standards...±.2% ±1 digit (except ±.5%, ±1 digit on 1000 mA range). **Overload Protection:** Input coupled through 3.0 Ampere fuse to shunt diodes for overloads above approximate 1.2 Volts. **AC CURRENT — Range/Voltage Drop:** 100 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mV, 100.0 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±1.0%, ±3 digits (except ±1.5%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. Laboratory references...±.5%, ±3 digits (except ±1.0%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. **Overload Protection:** Input coupled through 3.0 Ampere fuse to shunt diodes for overloads above approximate 1.2 Volts. **RESISTANCE — Range/Test Current:** 100.0 Ω/1.0 mA, 1.000 kΩ/1.0 mA, 10.00 kΩ/0.1 mA, 100.0 kΩ/1.0 μA, 1000 kΩ/10. μA. **Accuracy:** Built-in references... ±2%. ±1 digit. **Open-circuit Voltage:** 12 VDC. **Overload Protection:** Positive input over-voltage protection by blocking diode to 400 volts; negative input over-voltage through 0.03 A fuse and shunt diode. **GENERAL — Overrange Capability:** 100% on all ranges except 1000 VDC & 750 VAC. **Display:** 1999 maximum; seven segment planar; 0.55″ high digits. **Display Rate:** Approximately 5 per second, non-blinking. **Normal Mode Rejection:** 35 dB (line operation); extended on battery operation. **Common Mode Rejection:** 80 dB (line operation); extended on battery operation. **Power Line Isolation:** May be operated 1500 V above power line ground (during line operation). **Operating Temperature Range:** 10°C to 40°C. **Power Requirement:** 110 to 130 VAC, or 220 to 260 VAC (internal selectable); 60/50 Hz; 5 watts typical during charge. **Size (overall including handle folded to rear):** 3″ H x 8¼″ W x 8″ D).

NOTE: Accuracy specifications of the IM-2202 depend on use of built-in references or laboratory standard references for calibration.



3½-Digit Multimeter

26 ranges — AC, DC volts, DC current, and resistance. Has automatic polarity indication and decimal positioning and overrange indication, lots more! One of the finest DMM's you can buy!

Kit IM-102, Shpg. wt. 9 lbs. **269.95**

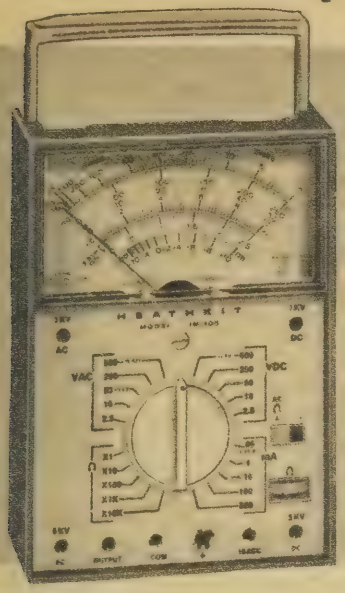
Our finest 3½-digit Multimeter has the features you NEED for fast, easy and profitable service

IM-102 SPECIFICATIONS: **DC VOLTMETER — 5 Ranges:** 200 mV, 2V, 20V, 200V, 1000V. **Input Impedance:** Approx. 100 megohm on 200 mV, approx. 1000 megohm on 2 V, 10 megohm on all other ranges. **Accuracy:** ±.2% ±1 digit with furnished DC calibrator, ±0.1% ±1 digit with lab calibration. **Normal Mode Rejection:** 35 dB minimum @ 60 Hz. **Common Mode Rejection:** 80 dB minimum with 1k unbalance @ 60 Hz. **OHMMETER — 6 Ranges:** 200 ohms with 1 mA test current, 2k with 100μA, 20k with 10μA, 200k with 10μA, 2M with 1μ, 20M with 100 nA. **Accuracy:** With DC calibrator, ±0.5% ±1 digit on 200, 2k, 20k, 200k ranges; ±1.5% ±1 digit on 2M and 20M ranges. With lab calibration, ±0.5% ±1 digit on 200 ohm range; ±0.25% ±1 digit on 2k, 20k, 200k; ±1% ±1 digit on 2M and 20M. **AC VOLTMETER** (Average responding, rms calibrated) **— 5 Ranges:** 20 mV, 2V, 20V, 200V, 1000V. **Input Impedance:** 1 megohm @ 150 pF. **Accuracy:** With DC calibrator, ±0.75% ±1 digit for 40Hz-10kHz, ±1% ±1 digit for 10kHz-20kHz on 200 mV and 2V ranges: ±0.75% ±1 digit for 40Hz-5kHz, ±1.5% ±1 digit for 5kHz-t0kHz on 20V and 200V ranges: ±1.5% ±1 digit for 40Hz-7.5kHz on 1000V range. **DC AMMETER — 5 Ranges:** 200μA, 2mA, 20mA, 200mA, 2A. **Voltage Drop:** 0.2V (nominal). **Accuracy:** With DC calibrator, ±0.5% ±1 digit for 2A, ±3% ±1 digit on all other ranges. With lab calibration, ±0.25% ±1 digit for 2mA and 20mA; ±0.3% ±1 digit for 200mA; ±0.5% ±1 digit for 2A. **AC AMMETER** (40Hz-10kHz) **— 5 Ranges:** 200μA, 2mA, 20mA, 200mA, 2A. **Voltage Drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±1.5% ±1 digit on 2A, ±1% on all other ranges. With lab calibration, ±0.75% ±1 digit on 200μA, ±0.7% ±1 digit on 2mA and 20mA; ±0.8% %1 digit on 200mA; ±1 digit on 2A. **GENERAL — Display:** Maximum count, 1999. **Overrange Indication:** Automatic beyond 1999. **Polarity Indication:** Automatic "+" or "—". **Display Rate:** Approx. 5 per second, non-blinking. **Power Requirement:** 120 or 240 VAC, 60/50 Hz, 8 W nominal. **Power Line Isolation:** May be operated 500 volts above power line ground (during line operation). **Operating Temperature:** 10°C-40°C. **Size:** 3″ H x 7″ W x 7.9″ D.

NOTE: Accuracy specifications of the IM-102 depend on use of built-in references or laboratory standard references for calibration.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Get Accuracy and Reliability with Heathkit VOM's



$74.95

$36.95

The IM-17 voltmeter is perfect for fast, easy electrical measurements around the house and in your car. You'll find hundreds of everyday uses for it!



[1]

[2]

[1] Heathkit taut-band general-purpose VOM Ideal for hobbyists or servicemen

Here's one of the many reasons why Heathkit VOMS are first on the list of professional technicians everywhere. The IM-105 is a high-accuracy VOM that's really designed to take it — rugged enough for bench and field work — and accurate enough for engineering, design and R&D work. It's the one to have if you're a hobbyist experimenter or service tech!

It's an easy, enjoyable one-evening kit too — just build-up two modular circuit boards and you have it. This highly versatile IM-105 gives you a low-friction, taut-band meter with diode & fuse protected movement. Fuse in-line with the input connector is removable from front for extra convenience.

Other professional features include calibrating controls, DC polarity switch, convenient thumbwheel ohms zero adjust, self-storing handle. Less batteries.

Kit IM-105, Shpg. wt. 3 lbs. **74.95**

Assembled SM-660, (less 5 kV ranges), Shpg. wt. 3 lbs. **94.00**

IM-105 SPECIFICATIONS: DC VOLTAGE RANGES: —0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: ±3% of full scale. Input resistance: 20,000 ohms/V full scale. AC VOLTAGE RANGES: —2.5, 10, 50, 250, 500 V, 1 kV & 5 kV full scale. Accuracy: ±4% of full scale. Input resistance: 5000 ohms/V. Input capacity: Less than 20 pF. Frequency response: 2.5, 10, and 50 V ranges. ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz. DC CURRENT RANGES: —0.05, 1.0, 10, 100, 500 mA & 10 A full scale. Accuracy: ±3% of full scale. Voltage drop: Approximately 0.25 V at full scale. RESISTANCE RANGES: —x1 (20 center scale), x10, x100, x1k, x10k. Accuracy: ±3 degrees of arc. Source voltage: x1 through x1k ranges: 1.5 V x 10k range. 15 V. DECIBEL RANGES: (0 dB=1 mW in 600 ohms). —10 to +56 dB. GENERAL — Operating temperature range: 0-55° C. Batteries (not supplied): One 1.5V "D" cell (NEDA #13). One 15V (NEDA #208). Dimensions: 7″ H x 5″ W x 2¼″ D.

[2] Our lowest cost VOM — with FET input for better accuracy, convenient carry case

The IM-17 is an economy meter that combines accuracy and utility. It's the perfect buy for homeowners, hams, servicemen, hobbyists, modelers, everyone. This battery-powered voltmeter has hundreds of uses around the house — use to check appliance operation, house wiring, even some automobile electrical circuits. It's one of the most useful instruments you can own — and its low kit-form price makes it a real bargain.

Has a rugged, portable case with storage compartment for prober that makes it ideal for fast, in-the-field checks. All solid-state circuit with FET input for less circuit loading, provides better accuracy than ordinary VOM's. Has zero and ohms-adjust controls, DC polarity switch, three test leads, jack for accessory probe. Easy 3-5 hour assembly makes it an ideal beginner's kit. Less batteries.

NOTE: The IM-17 is recommended for use with the Heathkit Continuing Education Series — See pages 92-95.

Kit IM-17, Shpg. wt. 4 lbs. **36.95**

IM-17 SPECIFICATIONS: DC VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scales. Input resistance: 11 meg. on all ranges. Accuracy: ±3% of full scale. AC VOLTMETER — Four ranges: 0-1, 10, 100, 1000V full scale. Input resistance: 1 meg. on all ranges. Accuracy: ±5% of full scale. Frequency response: ±1 dB, 10 Hz to 1 MHz. OHMMETER — Four ranges: RX1, RX100, RX10k, RX1M. Input resistance: 1 meg. on all ranges. Meter: 4½″, 200-μA, 100-degree movement. Transistor-Diode Complement: 1 FET, 4 silicon transistors, 1 silicon diode. Batteries (not supplied): One 1.5 V "C" cell (NEDA #14); one 8.4 V mercury cell (NEDA #1611). Dimensions: 5⅜″ H x 9⅜″ W x 9″ D.

Order your Heath/Schlumberger Assembled Instruments Catalog today!



FREE!

Complete descriptions, specifications and prices for many high performance instruments: frequency counters, oscilloscopes, power supplies, function generators, TV and audio service equipment, multimeters, chart recorders, more.

See how easy it is to get more instrument value per dollar, send the coupon at right for your free copy of our latest catalog. We'll also place you on our mailing list to receive future catalogs.

Please send my FREE copy of the latest Heath/Schlumberger Assembled Instruments Catalog.

Mail coupon to the Heathkit Electronic Center nearest you. (See page 51).

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Accurate and Reliable Heathkit Test Instruments



Heathkit IM-5228 Service Bench VTVM gives you "Pro" features at a low kit-form price

$52.95 Kit

A bench-type version of the IM-5218 with PLUS features that make it ideal for service and repair

The one to have for day-in, day-out service and testing! The big 6″ meter is really easy to read; separate 1.5 and 5 VAC scales make low voltage readings easy and accurate too. All calibration controls are conveniently adjustable from the front panel, so there's no need to remove the cabinet. Has the same outstanding features and performance specifications of the IM-5218 — 7 AC, DC and ohms ranges, 1% precision divider resistors, extended frequency response. All measurements are made with a single probe, and the ground test lead has an alligator clip for added convenience. Can be wired to operate from 120 or 240 VAC. Easy printed circuit board kit assembly, or order the unit factory assembled and tested. Either way, you'll get more instrument for your dollar. Converts easily to solid-state with IMA-18-1, below.

Kit IM-5228, Shpg. wt. 6 lbs. **52.95**

Assembled SM-5228, Shpg. wt. 7 lbs. **110.00**

IM/SM-5228 SPECIFICATIONS: **DC VOLTMETER — Ranges:** 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. **Input Resistance:** 11 megohm (1 megohm in probe) on all ranges: 1100 megohms with accessory probe. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** ±3% of full scale. **AC VOLTMETER — Ranges:** 0-1.5, 5, 15, 50, 150, 500, 1500 rms scales. **Frequency Response (5 V range):** ±1 dB 25 Hz to 1 MHz (800 ohm source, referred to 60 Hz). **Accuracy:** 5% of full scale. **Input Resistance & Capacitance:** 1 megogm shunted by 40 pF measured at input terminals (200 pF at probe tip). **OHMMETER — Ranges:** Scale with 10 ohm center, X1, X10, X100, X1000, X10k, X1 meg. Measures .1 ohm to 1000 megohms with internal battery. **Meter:** 6″ 200 μA movement, polystyrene case. **Battery:** 1½ V, "C" cell (not supplied). **Power requirement:** 120/240 VAC, 60/50 Hz, 10 W. **Dimensions:** 5″ H x 12 1/16″ W x 4¾″ D.

Convert your IM-5228, 5218, 18 or 28 to instant-on solid-state operation with the IMA-18.1. Two solid-state devices plug directly into tube sockets. Provides instant-on service. Helps eliminate pointer-drift corrections.

IMA-18-1, Shpg. wt. 1 lb. **19.95**



Heathkit IM-5218 — our most popular, lowest-cost VTVM

$42.95 Kit

The basic tester EVERYONE can use — make voltage and resistance tests on audio, TV, appliances, instruments, any tube or solid-state electronic equipment

Features a single test probe that makes all measurements; seven practical AC, DC volts and ohms ranges; a precision 4½″ color-coded 200 μA meter; and a convenient size for portability. 1% precision network resistors provide excellent accuracy; wide ±1 db, 25 Hz to 1 MHz frequency response permits a variety of AC measurements. Measures both rms and p-p AC volts. Separate full-scale ranges for 1.5 and 5 volts makes low-voltage readings really easy, ideal for work with solid-state and latest digital equipment. Easy printed circuit board kit assembly or you can order the unit factory assembled and tested. Can be wired for 120 or 240 VAC operation. Converts easily to solid-state with IMA-18-1 above.

Kit IM-5218, Shpg. wt. 5 lbs. **42.95**

Assembled SM-20A, Shpg. wt. 5 lbs. . . **80.00**

IM/SM-5218 SPECIFICATIONS: **Meter Scales:** DC & AC (rms): 0-1.5, 15, 50, 150, 500, 1500 V full scale. AC peak-to-peak: 0.4, 14, 40, 140, 1400, 4000 V full scale. **Resistance:** 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures 1 ohm to 100 megohms. **Meter:** 4½″ 200 μA movement. **Input resistance:** 11 megohms (1 megohm in probe) on all DC ranges; 1 megohm shunted by 35 pF on all AC ranges. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ±3%, AC ±5% of full scale. **Frequency response:** ±1 dB, 25 Hz to 1 MHz (600 ohm source). **Battery requirements:** 1.5 V, size "C" cell (not supplied.) **Power requirement:** 120/240 VAC, 50/60 Hz. **Dimensions:** 7⅜″ H x 4 1/16″ W x 4¼″ D.

Heathkit Precision RF Generator



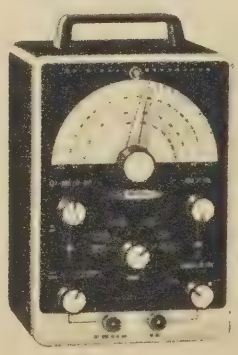
$119.95

Provides accurate and stable radio frequencies for precision testing of RF and IF stages, measuring gain and image rejection, determining sensitivity

The IG-42 provides 100 kHz to 30 MHz signals with ±3% adjustable frequency calibration. RF output voltage adjusts from 5 to 100,000 μV in five attenuated steps, with 10:1 variable attenuation. Output can be modulated from 0-50% with 5% accuracy. 120/240 VAC, 60/50 Hz. 8½″ H x 13″ W x 7″ D.

Kit IG-42, Shpg. wt. 15 lbs. **119.95**

Heathkit General Purpose RF Generator



$52.95

Provides modulated or unmodulated RF Ideal for radio-TV service

The Heathkit IG-102 is an accurate, stable source of modulated or unmodulated RF signals for use in AM, FM, TV, LW and SW broadcast bands. It covers 100 kHz to 100 MHz in 6 bands (100-200 MHz on harmonics) with 2% tuning accuracy. Has a large, easy-to-read calibrated dial, fine and coarse attenuation controls, external modulation input. Internal signal modulation is 400 Hz and a 400 Hz audio output is provided for audio tests. 120/240 VAC, 60/50 Hz. 9½″ H x 6½″ W x 5″ D.

Kit IG-102, Shpg. wt. 6 lbs. **52.95**

Discover the fun and satisfaction of kitbuilding at your nearby Heathkit Electronic Center.

There's a Heathkit Generator for ANY Service Need!

New **$339.95**

IG-1275 Deluxe Lin/Log Swept Function Generator

- ***Sine, square and triangle outputs***
- ***CW, burst, linear and log sweeps***
- ***Variable symmetry, variable offset, VCG input***



The IG-1275 is a reliable lab-grade function generator offering top performance at a low kit price. Provides sine, square and triangle waveforms PLUS swept-function waveforms for convenient frequency response tests. Also has pen lift and chart control signals for use with Heath chart recorders and others. Six operational modes provide all the versatility you need for extensive test and service — Continuous output (CW); gated CW; a burst mode that completes a variable integral number of output cycles; linear and log sweeps for a 1000:1 sweep range. Stop and start frequencies are set independently; sweep modes can also be triggered externally providing one sweep for each trigger, and stop for an integral number of cycles. Other convenient features include: A 50 dB switch attenuator variable between ranges; adjustable symmetry from 5% to 95%; variable offset; analog, sweep and sweep gate outputs for convenient system control; VCG input for external control of main generator.

Kit IG-1275, Shpg. wt. 15 lbs. **339.95**

Factory assembled and tested version of above:
SG-1275, Shpg. wt. 16 lbs. **500.00**

IG-1273 Lin/Log Function Generator

- ***Offers top performance at a budget price***



Has the same fine features and specifications (except swept-function specs) of the IG-1275 above, but does not offer swept-function capability.

IG-1273,
Shpg. wt. 15 lbs. **239.95**

Factory assembled and tested version of above:
SG-1273, Shpg. wt. 14 lbs. **400.00**

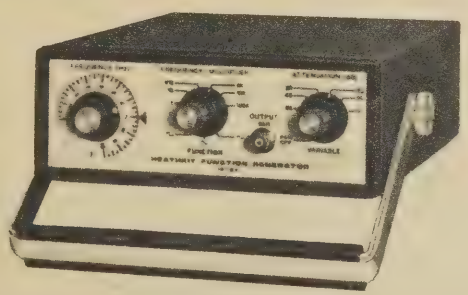
IG/SG-1275 SPECIFICATIONS: Ouput: 50-ohm source — short circuit protected. ±10 volts open circuit. ±5 volts into 50-ohm load. **Output Flatness:** ±0.1 dB to 300 kHz. ±0.5 dB to 3 MHz. **Output Waveforms:** Sine — Triangle — Square. Symmetry continuously variable 5% through 95% to 300 kHz. **Frequency:** 3 Hz through 3 MHz in 6 range steps on primary decade. 0.03 Hz on third decade of × 10 range. **Sine Distortion:** Less than 1%, × 10^1. Less than 0.05%, × 10^2- × 10^4. Less than 0.75%, × 10^5. Harmonics 30 dB down × 10^6. **Triangle Linearity:** No deviation greater than 1% to 300 kHz*. **Square-Wave Rise and Fall:** Less than 60 nS. **Dial Accuracy:** ±3% of full scale. **Attenuator:** 0 to —50 dB in 10 dB steps. Variable control 0 to —20 dB. **DC Offset:** Signal plus offset, limited to ±10 volts open circuit or ±5 volts into 50-ohm load. **Time Symmetry:** Within 1% of full period through 300 kHz*. **Sweep Generator:** 6 ranges, 10 μs through 1s. Each range may be extended by 100 with the variable control. **Sweep Output:** Supplies 0 to 4.5-volt linear ramp at sweep generator rate from a 1000-ohm source. **Sweep Gate Output Connector:** Supplies high TTL level for duration of sweep or burst. **Analog Output Connector:** Supplies 0 to 6 volts DC for 3 decade span. Less than 100-ohm source. **Sync Output Connector:** Supplies 1.5-volt (minimum) peak-to-peak signal from a 50-ohm source. **Voltage Control Input Connector (VCO):** 0 to ±5 volts signal for a 3-decade span. 8 kΩ input impedance. **External Trigger Input Connector:** ± (250 mV to 4 volts) with 10 kΩ. Triggers on positive slope. **Operating Temperature:** 0° to 40° C ambient. **Power Requirements:** 100 to 135 volts, 50—60 Hz, 20 watts maximum. Switch selectable for normal or low line. (200 to 270 volts, 50—60 Hz, switch selectable.) **Fuse Requirements:** ⅜-ampere, slow-blow, 120/240 VAC operation. **Dimensions:** 15″ wide, 11⅞″ deep, 5⅜″ high. 38.1 cm wide, 30.2 cm deep, 13.7 cm high.)

*Applicable only on top decade of each frequency range.

*NOTE: All specifications except those for swept functions also apply to IG/SG-1273 above.

Versatile, low-cost Function Generator

$109.95



Generates highly accurate sine, square or triangle waveforms over a frequency range of 1 Hz to 1 MHz. The six-position frequency multiplier and the larger front panel tuning control set any frequency fast and easy. The short-circuit-proof output amplifier supplies a 10 volt (p-p) signal into a 50 ohm load. A calibrated step attenuator adjusts from 0 to 50 dB (10V p-p to 30 mV p-p) in 10 dB steps. An attenuator control provides up to 20 dB additional attenuation for each step for a total of 70 dB. A triggered oscilloscope is needed for calibration.

Kit IG-1271, Shpg. wt. 7 lbs. **109.95**
Assembled SG-1271, wired version of the IG-1271 in same attractive blue & white styling (not shown), Shpg. wt. 6 lbs. **160.00**

IG-1271 SPECIFICATIONS: Frequency accuracy: ±3% of full scale on dial. **Functions: Triangle waveform:** Nonlinearity, 5% maximum. Symmetry within 10% of 50% duty cycle. **Square waveform:** 100 nanosecond maximum rise or fall time. Symmetry within 10% of 50% duty cycle. **Sine waveform:** Harmonic distortion: 3% max., 5 Hz to 100 kHz. **Power requirement:** 105-130 volts or 210-260 volts. rms, 60/50 Hz. 15 watts max. **Operating temperature:** 0 to 40°C. **Dimensions:** 3″ H x 7¼″ W x 8⅞″ D (with handle removed). **Net weight:** 4.2 lbs.

Stereo Generator for receiver & tuner tests

$104.95

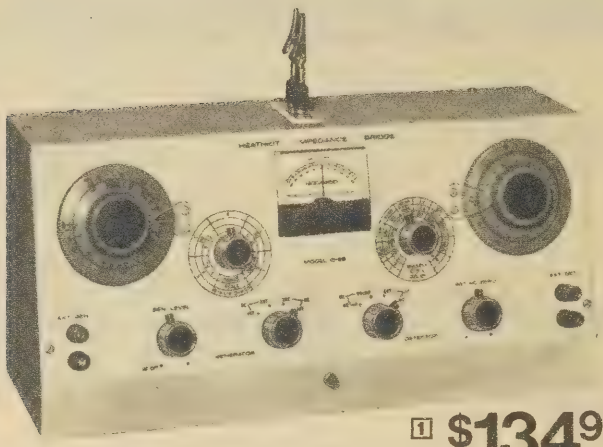


Provides audio or composite stereo signal for multiplex adapter adjustments...RF carrier modulated by these signals for tuner & receiver adjustments...phase test function for subcarrier transformer adjustment...a variable level crystal-controlled 19 kHz pilot signal for checking receiver lock-in ranges...plus built-in sweep and marker signals for RF & IF alignment. Other features include switch selection of 400 Hz, 1 kHz, 5 kHz, 19 kHz, 38 kHz and one of two SCA frequencies. With test leads.

Kit IG-5237, Shpg. wt. 11 lbs. **104.95**

IG-5237 SPECIFICATIONS: RF Signal frequency: 100 MHz adjustable by approx. ±2 MHz. **Pilot modulating frequency:** 19 kHz ±2 Hz. **FM modulation:** Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase). Monophonic FM. **Deviation:** Adjustable to 75 kHz. **Sweep rate:** (used for RF and IF alignment) 60 Hz. **Sweep width:** (used for RF and IF alignment). Adjustable to 750 kHz. **RF attenuator range:** 60 dB in 20 dB steps. **Crystal-controlled markers:** 10.7, 90.95, 96.30, 96.30, 101.65 & 107 MHz. **Composite signal output:** Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). **Audio output:** 400, 1000 & 5000 Hz; 10 kHz (±2 Hz); 38 kHz & SCA (65 or 67 kHz). **Distortion:** (At 400, 1000 & 5000 Hz), Less than 5%. **Power requirement:** 120/240 VAC, 50/60 Hz, 35 W. **Dimensions:** 5½″ H x 13½″ W x 9″ D.

Useful kits for your test or hobby bench



1 $134.95

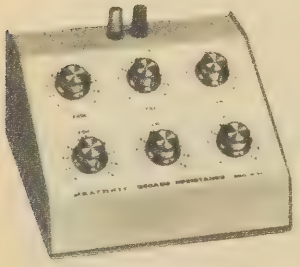
1 High-accuracy Impedance Bridge

Has four separate bridge circuits for accurate measurement of resistance, capacitance, and low & high inductance, dissipation factor of capacitors and storage factor of inductors. Has direct reading 100-0-100 microammeter, front panel binding posts for easy test setups. Requires headphones or scope for alignment.

Kit IB-3128, Shpg. wt. 11 lbs. **134.95**

IB-3128 SPECIFICATIONS: **DC Measurements:** Built-in power supply. Binding posts for external supply. **Meter:** 100-0-100 microampere meter. **AC Measurements:** Built-in 1000 Hz generator. Terminals on panel for external generator. **Detector:** Vacuum tube detector and amplifier, using built-in meter. Terminals for external detector. **Resistance:** 0.1 ohm to 10 megohm. **Capacitance:** 100 pF to 100 μF. **Inductance:** 0.1 mH to 100 H. **Dissipation Factor:** (D) 0.002 to 1. **Storage Factor:** (Q) 0.1 to 1000. **Accuracy:** ½% decade resistors used. **Power Supply:** Transformer and silicon rectifier. **Power Requirements:** 105-125 V. or 210-250 V., 60/50 Hz, 10 watts. **Dimensions:** 8″ H x 17″ W x 6″ D.

Decade Resistance Box



The IN-3117 Decade Resistance Box is an accurate laboratory-type instrument for use wherever electrical measurements involving resistors are made. The wide range of available resistance values makes the IN-3117 invaluable as a variable multiplier or shunt, a variable substitution resistor, or as an arm for DC and AC bridges. Use with IN-3147 below for solving resistance and capacitance networks where a large range of values is necessary. Covers 1 ohm to 999,999 ohms in 1-ohm steps. Resistors are 1-watt, ½% accuracy.

Kit IN-3117, Shpg. wt. 3 lbs. . . . **42.95**

IN-3117 SPECIFICATIONS: **Minimum DC Resistance:** .025 ohms or less at terminals with all switches at zero. **Dimensions:** 5″ H x 7½″ W x 6⅝″ D.



2

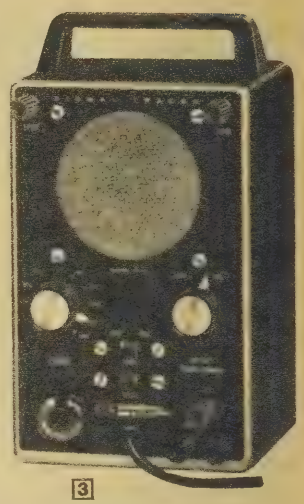
$59.95

2 Direct-reading Capacitor Checker

Helps you do fast, accurate analyses of all capacitor types. No bothersome calculations — just read and interpret directly from front-panel scales. Measures capacitance from 10 pF to 1000 μF, resistance from 5 ohms to 50 megohms and also has 16 leakage testing voltages. Low bridge voltage makes it ideal for testing miniature electrolytics. Has terminals for external standard L, C or R measurements, calibrated power factor control, "eye" tube null and leakage indicator. External audio generator may also be used. Can be wired for 120/240 VAC operation.

Kit IT-28, Shpg. wt. 7 lbs. **59.95**

IT-28 SPECIFICATIONS: **Test Circuit:** AC bridge, powered by internal 60 Hz supply or partial external audio generator with 10 V output. **Upper Frequency Limit:** 10 Hz. **Capacitance Ranges:** 10 pF to .005 μF, .001 μF to .5 μF, .1 μF to 50 μF, 20 μF to 1000 μF. External standard (comparison bridge; maximum ratio 25:1). **Inductance Check:** External standard only. **Power Requirement:** 120/240 VAC 60/50 Hz, 30 W. **Dimensions:** 9⅝″ H x 6⅝″ W x 5″ D.



3

$34.95

3 Visual-aural Signal Tracer

The instrument you NEED for fast, effective stage by stage trouble-shooting and service in AM, FM and TV circuits, both tube type and solid-state. Trace RF, IF and audio signals; locate noisy or intermittent components. Has 3½-inch speaker, bright eye-tube indicator. Also doubles as test amp and speaker. Switchable audio/RF probe included. Can be wired for 120/240 VAC operation. 7½″ H x 4½″ W x 4″ D.

Kit IT-12, Shpg. wt. 6 lbs. **34.95**



4



5

4 Capacitor Substitution Box

Helps you determine proper capacitance values without time-consuming calculations. Provides switch selection of any of 18 EIA standard capacitors from 100 pF to 0.22 μF.

The special rotary switch incorporates make-before-break contacts that provide smooth changes in capacitance without "opening" or "shorting" the circuit under test. All capacitors are rated at 600 V except 3 lowest and 2 highest values are 500 & 400 V respectively. Accuracy is ±5% for values from 0.0001 μfd through .00047 μfd; and ±10% for 0.01 through .22 μfd. 3″ H x 3″ W x 6″ D.

Kit IN-3147, Shpg. wt. 2 lbs. **12.95**

5 Resistor Substitution Box

Gives you a rapid and flexible means of determining resistance values required in new electronic circuit design. Also lets you substitute resistance values directly in existing circuits during operation to determine the resistance value that will provide maximum circuit performance. Provides switch selection of any one of 36 EIA standard 10% 1-watt resistors from 15 ohms to 10 meg.

The "shorting type" switches with make-before-break action permit smooth selection of the resistance values without opening or shorting the circuit. All values are EIA standards. 5⅜″ H x 3⅛″ W x 3″ D.

Kit IN-3137, Shpg. wt. 2 lbs. **12.95**

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Our low-priced Heathkit Color TV Game

GD-1999 Universal Color TV Game

Turns ANY TV set into a fun-filled Action Arena! Play Hockey, Tennis or Handball right in your living room!



Any TV, color or black-and-white, can provide your family with hours of fast-paced action. Just connect the GD-1999 to your present TV and name your game: Tennis for two, ice hockey for two (or one vs the machine) or handball for two. If you have a color set, the tennis court appears green, the handball court brown and the ice blue. You can adjust the racquet size (small, medium or large) to fit your level of proficiency. The ball is always served off the face of the racquet for more realistic play. You can even put "English" on the ball. A realistic "rebound sound" comes through the TV speaker. The ball speed automatically increases after 4 volleys for added realism and excitement. The score is automatically displayed in large, easy-to-read digits for 1.5 seconds each time a point is scored. The game ends automatically when a player reaches 15 points. The GD-1999 goes together in about an hour with simple mechanical assembly. The game board is fully assembled and tested, in fact, there's no soldering at all required! Installation is fast and easy, too! It is designed to remain permanently connected to your TV and will not interfere with normal TV operation when not in use. The two game controllers have 10 foot connecting wires so that you can operate and reset the games from your favorite chair. FCC Type Approved.

Kit GD-1999, Shpg. wt. 3 lbs. **74.95**

Your GR-900 Color TV will impress your friends even more in a fine-furniture cabinet



[1]

Fully-assembled and finished cabinets of fine hardwoods and veneers. Beautiful natural wood-grain finish.

HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE

[2]



[1] **Mediterranean cabinet.** Beautifully constructed of pecan-stained wood solids and veneers. Simulated wood-grain base and trim. Accepts 2 speakers. 30⅞" H x 48¾" W x 20⅝" D (23½" D with cup).

GRA-404-25, Shpg. wt. 91 lbs. Motor Freight **179.95**

[2] **Early American Cabinet.** Maple-stained wood solids and veneers. Simulated wood-grain trim. 32½" H x 38½" W x 19¾" D (22⅝" D with cup). Shpg. wt. 73 lbs.

GRA-403-25, Motor Freight **169.95**

Please allow up to 10 weeks for delivery

Antennas and accessories designed for better reception

[3] **"Super Antenna".** VHF-UHF-FM. 60 elements. F/B signal rejection: VHF Lo, 21 dB; hi, 22 dB; UHF, 22 dB. 190" boom. 105" turning radius. Includes removable FM blocking elements.

GD-1461, 300 ohms, less mast and cable. Shpg. wt. 20 lbs. Motor Freight ..**84.95**

75-ohm **89.95***

Deluxe "Fringe" Antenna. Not shown. Has 28 elements. Provides VHF reception up to 100 miles, UHF up to 60 miles. 131" boom, 80" turning radius.

GD-1441, 300 ohm, less mast and cable. Shpg. wt. 10 lbs. **39.95**

75 ohm **44.95***

*Order GD-298 and GD-1054 to convert to 75 ohms. Reg. $8.90 — ONLY $5 with antenna.

[4] **Coaxial distributor for 4-room TV/FM network** — Takes single coax input from all-channel antenna, amplifies it to feed 4 wall outlets. Includes 200' coax cable, connectors, crimping tool, 4 matching transformers/splitters.

GD-248, Shpg. wt. 11 lbs. **89.95**

GD-328, 100' coax. w/connectors and antenna boot installed, Shpg. wt. 4 lbs. **13.95**

[5] **Deluxe Cornell-Dubilier Antenna-Rotor System.** Consists of control box and rugged outdoor rotor for dramatically improved TV and FM reception. Heavy-duty 1 rpm rotor has positive automatic stop, instant reverse. Supports antennas to 150 lbs. Lower mast clamp accepts ⅞" to 2" dia. masts. Solid-state control box has 360° rotor control, plugs into AC outlet. Requires 5-wire cable (not supplied).

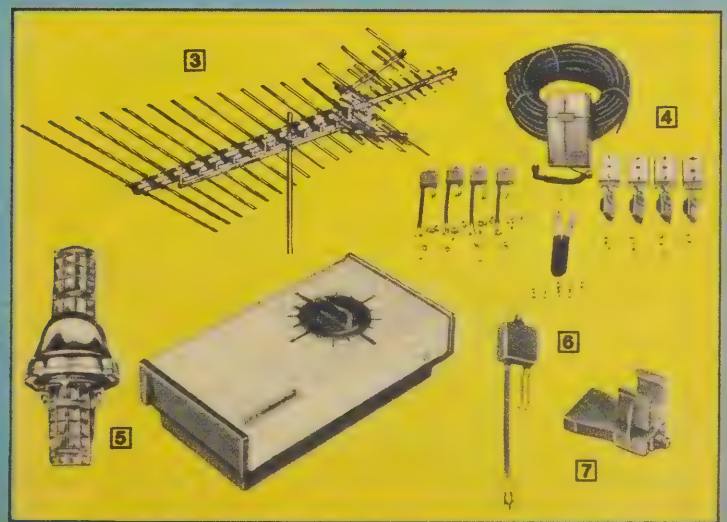
GDP-1176, Shpg. wt. 14 lbs. **54.95**

[6] **75/300 Ohm Transformer-Splitter.** Matches one 75 ohm coax to separate VHF, UHF 300 ohm leads.

GD-298 Shpg. wt. 1 lb. **4.95**

[7] **All-Channel Matching Transformer.** Converts 300 ohms to 75 ohms for coax.

GD-1054, Shpg. wt. 1 lb. **3.95**



Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

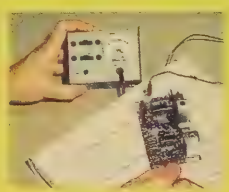
Quality Heathkit Color and B/W TV!



19″ Diagonal Measure GR-500



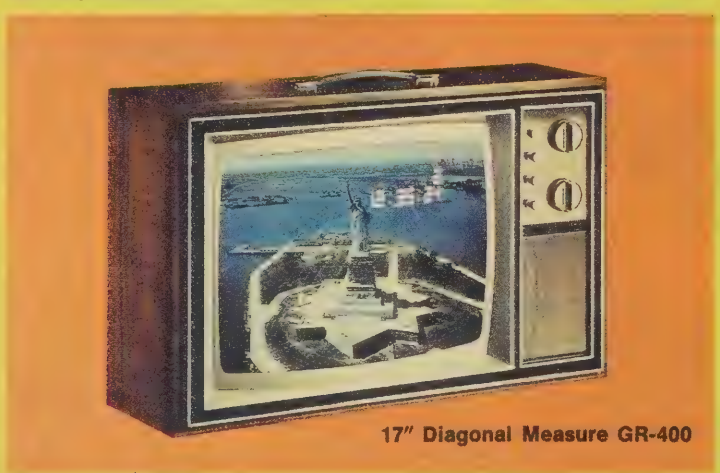
Modular circuit boards plug onto the slide out chassis. All components are easily accessible.



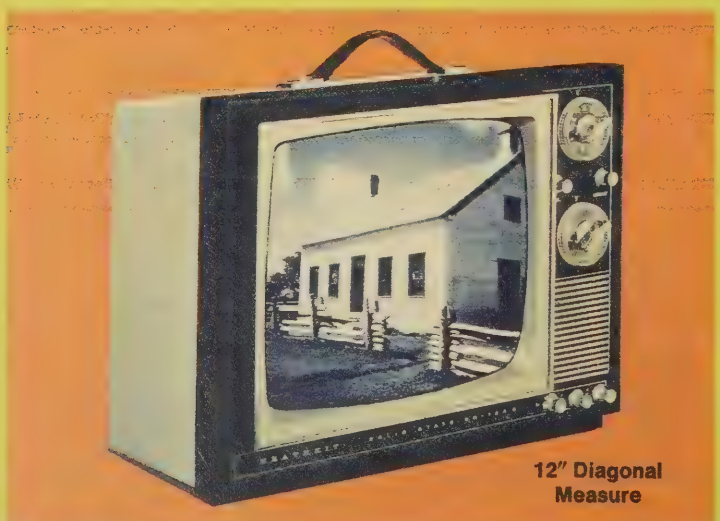
Separate test meter and troubleshooting manual let you solve most problems yourself.



Factory-adjusted static toroid yoke ends convergence or purity adjustment — forever.



17″ Diagonal Measure GR-400



12″ Diagonal Measure

Build yourself years of viewing pleasure with one of these Heathkit popular-size Color TV's

> *...a very simple kit to assemble... a picture quality second to none... In summation, this is a first-class color TV receiver, well worth the effort of assembling it from a kit.*
>
> *Popular Electronics, September, 1975*

These table/cart-size color TV's offer the same advanced design and precision engineering of our full-size console models, plus the features that have made Heathkit TV an industry leader. Choose the size that fits you're viewing needs for superb quality color TV you'll enjoy for years to come. The precision in-line gun color tube has a negative matrix screen for far more contrast and brightness than conventional color tubes. As you turn the tuning knob, the channel numbers appear on the screen in big, white, easy-to-read numerals. You can even add an on-screen digital clock and the time in hours, minutes and seconds will appear right with the channel numbers. An automatic fine-tune circuit locks in on the best picture each time the channel is changed. And once you set the contrast, brightness, color and tint with secondary rear panel controls — a touch of the PPC button returns the picture to perfection instantly — no matter how much the front panel controls have been disturbed — great if you have young children. The VHF tuner has a mixer circuit with a dual-gate FET, and an RF amplifier for low noise, high gain, and low cross modulation. The four tuner circuits (most sets have only three) offer far greater selectivity so you can get a better picture, with less interference. Has front panel controls for on-off volume, tint/AFC and color; thumbwheel controls for contrast and brightness. Other features include detent VHF and UHF tuning, instant-on operation with front panel defeat, hi-fi output jack and TV speaker defeat switch; 75-ohm VHF antenna input (ideal for cable TV installations).

Kit GR-500, less cabinet, Shpg. wt. 88 lbs., UPS **539.95**

GRA-500-1, walnut veneer table model cabinet (main illustration), 17¼″ H x 25½″ W x 14″ D (17″ D including cup), Shpg. wt. 28 lbs., UPS **46.95**

Kit GR-400 (less cabinet), Shpg. wt. 104 lbs., UPS..... **484.95**

GRA-400-1, walnut-veneer cabinet (16⁹⁄₁₆″ H x 24⅛″ W x 12¾″ D), (15¾″ D including cup). Shpg. wt. 27 lbs., UPS **39.95**

GRA-403-18, roll-around cart. 22″ H x 27″ W x 15⅝″ D, Shpg. wt. 17 lbs., UPS **24.95**

Kit GRA-2000-1, Digital Clock Accessory, Shpg. wt. 1 lb. **35.95**

GR-500, -400, SPECIFICATIONS: **Deflection:** Magnetic, 90 degrees. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna input impedance:** VHF: 300 Ω balanced or 75 Ω unbalanced. UHF: 300 Ω balanced. **Tuning range:** TV channels 2 through 83. **Picture IF carrier:** 45.75 MHz. **Sound IF subcarrier:** 42.17 MHz. **Sound IF frequency:** 4.5 MHz. **Video IF bandwidth:** 4.08 MHz at 6 dB down. **Hi-Fi output impedance:** 2200 Ω. **Frequency response:** ±1 dB, 50 Hz to 15 kHz. **Harmonic distortion:** less than 1% at 1 kHz. **Output voltage:** greater than 1.0V rms. **Audio output impedance:** 8 Ω. **Output power:** 1 watt: **Power requirement** : 110-130 VAC, 60 Hz, 230W.

Carry Anywhere Black and White Portable TV

At home, the GR-104C plugs into a wall outlet. In your car, camper or boat, it works right from your 12-volt battery system. Outdoors, you can use it with its optional self-contained battery pack as a go-anywhere portable. Any way you use it, you'll get a crisp, clean, clear black-and-white picture of unsurpassed quality. Three IF video amplifiers provide superior gain and a 4-circuit VHF "memory" tuner brings in each VHF station with real precision. Has regulated power supply for drift-free operation, detent tuning, lighted channel indicators, telescoping antenna for VHF and a loop antenna for UHF. Rugged high-impact case with carrying handle for easy portability. Easy kit assembly with two circuit boards and a wiring harness. The VHF and UHF tuners are factory assembled and aligned.

Kit GR-104C, Shpg. wt. 35 lbs. **164.95**

Kit GRA-104-3, Optional Battery Pack, 9 lbs. **64.95**

GR-104C SPECIFICATIONS: **Picture Size:** 74 sq. in. viewing area, 12″ picture diagonal. **Deflection:** Magnetic, 110 degrees, 20 mm neck. **Focus:** electrostatic. **Antenna Input Impedance:** 300 ohm balanced. **Audio Power Output:** 500 mW into 24 ohm load. **Power Requirement:** 110-130 volts AC, 40 watts; 12 volts DC at 24 watts. **Overall Size:** 11½″ H x 15¾″ W x 9⁵⁄₁₆″ D.

Another Heathkit Color TV Breakthrough— the world's only computerized television system



A sophisticated color TV that's also a computer you can program for an entire evening of TV viewing!

Heath's GR-2001 is the most sophisticated, best performing color TV we've ever designed, but it is also much more. It is the heart of a total home viewing system — a Computer TV!

Complete Programming Capability

This Computer TV system allows you to program your set for an entire evening's viewing. The top bank of 8 keys accesses the memory and turns the on-screen clock display into a computer CRT readout which allows you to see your "program" as you enter it through the bank of 12 keys below the programmer panel. The selected time appears in the first four digits of the clock display, the channel number appears in the last two. First, enter the time at which you want the set to change channels. Then, enter the channel number you want. You can program up to 32 channel changes within two 12/24-hour periods!

The two programming periods add extra versatility. Program the first for your daytime viewing schedule, the second for evening shows. Or, program the first for weeknights, the second for weekends. You can even preselect the programs young children can watch—once the Programmer is engaged the manual keyboard is disconnected and can only be reactivated by the remote control or by pressing the correct button on the programming panel. There are an almost infinite number of uses for the Programmer.

Our Best Color Picture and Sound Ever!

The TV set itself contains dozens of circuit refinements and improvements designed to give you the best picture and performance you've ever seen. New phase-locked loop horizontal and vertical oscillators provide a rock-steady picture — it's so adjustment-free that we've eliminated conventional horizontal and vertical hold controls! Audio and video muting provides quiet between-channel tuning. The Automatic Gain Control circuit has been significantly improved to provide better resistance to airplane flutter. The audio circuitry is probably the finest on any commercial set in the world. The sound signal has its own separate IF stage. You can hear the difference — especially if you use the output jack to connect the GR-2001 to your stereo system. It's one of the first sets ever to give you real hi-fi sound from a TV!

Fully Automatic Antenna Rotor

The Automatic Antenna Rotor Control is another Heathkit innovation. Instead of manually rotating the antenna each time you change stations, the Automatic Rotor control turns the antenna to the correct heading each time you change channels — no special knobs to turn, no buttons to push. You can select up to eight separate antenna headings with up to three stations per heading! It is the world's most convenient rotor system.

Remote Control Convenience

The wireless remote control is the best we've ever offered with improved circuitry for greater range and reliability. It provides continuous volume control, up/down channel scan, tint adjustment, power on/off — all at the touch of a button.

The World's First (and only) Totally "Programmable"

HEATHKIT ELECTRONIC CENTER charg-a-kit REVOLVING CHARGE

There's never been a color television system like this before — just look at these performance and convenience features:

- ***Changes channels automatically at any preselected time***
- ***Automatically rotates your TV antenna to the correct heading each time you change channels***
- ***1"-tall on-screen digits show you the channel number and time whenever you change channels***

1 Programmer Keyboard. These eight buttons allow you the instant access to the optional Programmer's static NMOS random access memory (RAM). Just enter the time and channel number you want — up to 16 changes in either of two switch-selected positions. Then the optional Programmer's memory takes over. While you sit back and relax, the GD-1185 Programmer automatically changes to the right channel at the right time. You can even program the set to return to manual operation at a preselected time, then resume automatic operation at another time. When the last program you want to see is over, the set can be programmed to switch to an empty channel. This will cause the screen to go blank and the on-screen readout to flash on and off, indicating that it is time to turn the system off with the front-panel pushbutton or optional remote control.

2 Convenient Remote Control. The optional remote control lets you adjust volume, turn the set on or off, adjust tint, scan up or down through the pre-programmed channels — even turn the optional Programmer on or off. The advanced remote control receiver builds right in to the chassis on the GR-2001.

3 Random-Access Tuning. The 3 x 4 keyboard lets you instantly choose any of 16 preselected stations. Switch from VHF to UHF, up or down. In any sequence, and be tuned in instantly, without switching through in-between channels. Up and down buttons on the keyboard also let you scan all the preselected stations. And the option GRA-2001-9 lets you add up to 8 additional channels — up to 24 in all!

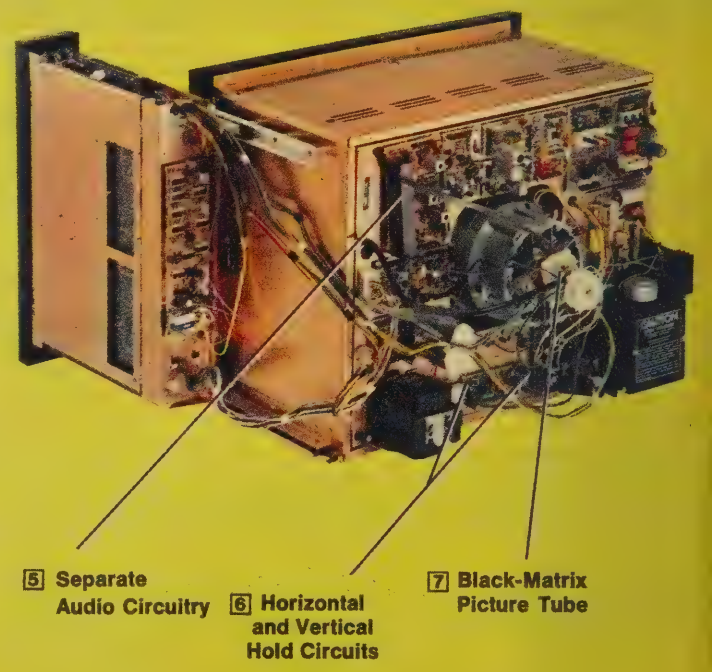
4 Automatic Antenna Rotor Control: A Heathkit exclusive! With the optional GD-1184 antenna rotator control, you can program the GR-2001 to automatically rotate your outdoor antenna system as it changes from one channel to another, for optimum reception on every channel. It's perfect for areas where stations are in widely separated locations.

5 Separate Audio Circuitry on the IF board. The GR-2001 gives you audio reception to go along with its outstanding picture thanks to a separate audio circuit that's the equivalent of a fine-quality FM receiver. The wide-range speaker (included) offers excellent fidelity too. And an audio output jack lets you listen to the TV sound through your stereo system.

6 Phase-Locked-Loop Horizontal and Vertical Hold Circuits. The GR-2001 "locks in" on any channel with a picture that's rock-steady and stable. There are no ordinary vertical and horizontal hold controls because you never need them — so you get consistently excellent pictures year after year.

7 Black-Matrix Picture Tube. The GR-2001's 25" (diagonal), ultra-rectangular picture tube provides one of the brightest, sharpest pictures in the world. The tube is fully shielded to maintain outstanding color purity by eliminating stray magnetic fields.





SPECIAL WARRANTY SERVICE PLAN FOR SOLID-STATE TV MODULES!

If a component proves defective during the 90-day warranty period, the modules will be serviced with no charge for parts or labor. If the problem is due to a construction error, the modules will be inspected and serviced at a charge of $5.00 per module. After the 90-day warranty has expired, the module service fee is $5.00 per module plus parts. All picture tubes warranted for two full years.

GR-2001 SPECIFICATIONS: **Deflection:** Magnetic, 90°. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna Input Impedance:** VHF: 300Ω balanced or 75Ω unbalanced. UHF: 300Ω balanced. **Picture IF Carrier:** 45.74 MHz. **Sound IF Carrier:** 41.25 MHz. **Color IF Subcarrier:** 42.17 MHz. **Sound IF Frequency:** 4.5 MHz. **Video IF Bandwidth:** 4.08 MHz, at 6 dB down. **HI-FI Output:** Frequency Response: ±1 dB, 50 Hz to 15 kHz. Output voltage: Greater than 1.0 V RMS. **Audio Output:** 4Ω or 8Ω, 2 watts. **Power Requirement:** 110 to 130 volts AC, 60 Hz, 200 watts. **Overall Dimensions:** 20⅛" H x 29⅛" W x 21¾" D. **Net Weight:** 112 lbs.

47 Heathkit Electronic Centers nationwide. See page 51 for the one nearest you.

Computer Color TV

Heathkit GR-2001 25" (diagonal) Color TV Kit

Even if you order it without the options below, it's still one of the finest sets you can buy anywhere! Order your choice of cabinets at right. Includes chassis, picture tube, one speaker.

Kit GR-2001, Shpg. wt. 146 lbs. **729.95**

Second Speaker for GR-2001

Fits in space on GR-2001 cabinets where indicated. With cables.

GRA-2000-7, Shpg. wt. 2 lbs. **7.95**

8-Channel Accessory for your GR-2001

Adds 8 more channels to the GR-2001's random-access tuning system (a total of 24 channels) for even greater versatility.

Kit GRA-2001-9, Shpg. wt. 1 lb. **10.95**

GD-1185 TV Programmer

Automatically changes channels at any time you select — up to 16 changes in either of two switch-selected 12/24-hour periods. Front-panel keyboard and on-screen readout make it easy to enter any time or channel you want. It's the ultimate in convenience — and a Heathkit exclusive! Requires GRA-601 Clock below for operation.

Kit GD-1185, Shpg. wt. 8 lbs. **179.95**

Automatic Antenna Rotor Control

Automatically rotates your antenna to preselected directions for the best reception on each channel. Accepts up to 3 channels for each of 8 directions. Operates with or without GD-1185 above. For use only with existing Cornell Dubilier AR-40 rotor system (Heath GDP-1176 or GDP-258) or optional motor below.

Kit GD-1184, Shpg. wt. 6 lbs. **69.95**

GDA-1184-1, Rotor Motor. Requires 5-wire cable (not supplied). 11 lbs. **39.95**

Easy-to-build On-Screen Digital Clock

Displays the time in hours, minutes and, if desired, seconds in 12/24 hour format below the channel number. Easy-to-read white digits can be adjusted with the channel numbers to remain on the screen for up to 1½ minutes each time the channel is changed, remain on permanently or automatically reappear at approximately 2-minute intervals.

Kit GRA-601, Shpg. wt. 1 lb. **35.95**

Complete Computer TV System with Programmer, Clock and Rotor Control

- GR-2001 Deluxe 25" Color TV
- GD-1185 Programmer
- GRA-601 On-Screen TV Clock
- GD-1184 Automatic Antenna Rotor Control (less motor)

GRS-2002, Shpg. wt. 161 lbs.
Motor Freight 949.95

SAVE $64.85

If purchased separately, 1014.80

System Price **$949.95**

Order optional cabinet at right

GR-2001 with Programmer and Clock

- GR-2001 Deluxe 25" Color TV
- GD-1185 Programmer
- GRA-601 On-Screen TV Clock

GRS-2001, Shpg. wt. 155 lbs.
Motor Freight 889.95

SAVE $54.90

If purchased separately, 944.85

Order optional cabinet at right

System Price **$889.95**

Convenient Wireless Remote Control



Controls on-off, volume, up/down channel scan and tint. Also turns programmer on or off. Operates up to 20 ft. away from set.

Kit GRA-2001-6,
Shpg. wt. 4 lbs. **99.95**

Fine-Furniture Cabinets for your GR-2001 or GR-2000 Color TV

Fully assembled and finished — the perfect "home" for your set



Contemporary cabinet. Dual speaker capability. Comes completely assembled and finished. Constructed of solids and veneers; oiled walnut finish. 28⅜" H x 46⅞" W x 20⅝" D. (23⅝" D including cup).

GRA-602-25, Shpg. wt. 89 lbs. Motor Freight **174.95**



Mediterranean cabinet with doors. Accepts 2 speakers. Constructed of solids & veneers; simulated wood-grain base & trim. Dark oak finish. Hardware finished in Windsor Antique Gold tone. Fully assembled, finished. 29⅝" H x 48⅛" W x 23" D. (26¼" D including cup). Shpg. wt. 126 lbs.

GRA-605-25, Motor Freight **269.95**



Early American cabinet. Twin speaker capability. Distressed maple finished wood solids & veneers; simulated wood-grain trim. Hardware has Windsor Antique Gold finish. Fully assembled & finished. 31¾" H x 47⅞" W x 20½" D. (23⅞" D including cup). Shpg. wt. 94 lbs.

GRA-603-25,
Motor Freight **184.95**



Mediterranean cabinet. Accepts 2 speakers. Crafted of solids & veneers; simulated wood-grain trim. Dark oak finish. Hardware features Antique Gold finish. Fully assembled and finished. 30⅝" H x 49⅝" W x 20⅞" D. (23⅝" D including cup.) Shpg. wt. 92 lbs.

GRA-604-25,
Motor Freight **184.95**



Compact contemporary cabinet. Solidly constructed of wood solids and veneers, beautifully finished in luxurious oiled walnut finish. Comes fully assembled with cutout for one speaker. Measures 34⅜" H x 33⅞" W x 20⅝" D (24⅛" D including cup.) Shpg. wt. 76 lbs.

GRA-608-25,
Motor Freight **139.95**

Simulated TV Pictures

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

Our lowest price ever on this big-screen, digital-design Color TV!

Now's the time for BIG SAVINGS on our



Simulated TV Picture

SAVE $80 from '76 price

This is the set that brought color TV into the digital age — the Heathkit GR-2000. It offers one of the most vivid, realistic pictures in the industry today and you can get it at a whopping $80 price cut to make it an even better bargain!

Total electronic tuning convenience

Simply touch a button on the front panel (or the optional remote control) and the sophisticated programmable digital counter sweeps up or down through any 16 pre-selected stations. And because the tuning is electronic, you eliminate noisy, unreliable turret tuners. Even the channel numbers are displayed electronically, right on the screen. The large, white digits can be positioned anywhere on the screen. They can be adjusted to remain on the screen for up to 1½ minutes, or permanently if you choose. And you can recall them by changing the channel or by tapping the Volume on the remote control.

A 25" (diagonal) color picture second to none!

Critics and owners have praised the GR-2000 for a bright, accurate color picture that seems to make programs "come alive". The picture tube provides outstanding brightness and sharpness thanks to its negative matrix and fully-illuminated phosphor dots.

Revolutionary electronics!

The GR-2000's circuitry is some of the most sophisticated in the industry. It was the first TV to utilize a fixed IF filter which virtually eliminates adjacent-channel interference — especially important in urban areas crowded with stations. This advanced filter provides ideally-shaped bandpass and — unlike the "traps" used in most sets — it never requires alignment.

And the GR-2000 uses other advanced circuitry to assure superior performance — improved signal circuits for greater clarity and definition, DC-controlled contrast for reduced interference, an integrated circuit color amplifier for more precise, realistic tints, and an IC automatic gain control for excellent sensitivity, selectivity and noise rejection. You get a consistently excellent picture year after year.

Easy and fun to build!

The completely illustrated assembly manual makes it easy to feel the pride of "building it yourself." Almost all the circuitry mounts on plug-in printed circuit boards and factory-fabricated wiring harnesses minimize point-to-point wiring. You'll find that building a GR-2000 is enjoyable — and you'll be even prouder of its exceptional performance.

Save money on service!

Because you build the set, you can service it. All the circuitry you need is built in — a digital-design dot generator, circuits for purity and convergence adjustments, vertical and horizontal centering circuits and a test meter. Much of the circuitry is accessible by pulling out the service drawer. You can keep your set in peak-performing condition with less inconvenience and expense.

Optional accessories make your set even more enjoyable!

The optional Clock Module adds the time to the on-screen channel readout. The time appears in 1" digits beneath the channel and the clock can be set for 4 or 6-digit readout in 12 or 24-hour formats.

The optional remote control provides wireless selection of channel, volume, tint, color intensity — it even turns the set on and off!

And, if you want the incomparable performance of the GR-2000 in a more compact cabinet, look at the GR-2050 on the next page. It uses exactly the same chassis but with a smaller 21" (diagonal) screen.

SPECIAL WARRANTY SERVICE PLAN FOR SOLID-STATE TV MODULES!

If a component proves defective during the 90-day warranty period, the modules will be serviced with no charge for parts or labor. If the problem is due to a construction error, the modules will be inspected and serviced at a charge of $5.00 per module. After the 90 day warranty has expired, the module service fee is $5.00 per module plus parts. All picture tubes warranted for two full years.

Find out about our convenient Charge-A-Kit credit plan — ask your salesperson.

world-famous GR-2000 and GR-2050 color TV's!



Simulated TV Pictures



GR-2000 25″ (Diagonal) Digital Color TV Kit

Now at a sensational new low price — save $80 and build yourself one of the finest performing color TV's you can buy! Includes chassis, one speaker, and picture tube. Order your choice of fine-furniture cabinets from page 89. Shpg. wt. 147 lbs.

Kit GR-2000, Motor Freight ..... **Was 699.95 Now Only 619.95**

Optional Digital Clock for GR-2000.

Kit GRA-601, Shpg. wt. 1 lb. **35.95**

Optional Remote Control for GR-2000.

Kit GRA-2000-6, Shpg. wt. 4 lbs. **99.95**

Second Speaker for GR-2000. Fits in space on GR-2000 cabinets (where indicated). Includes all cables.

GRA-2000-7, Shpg. wt. 2 lbs. **7.95**

GR-2000 SPECIFICATIONS: **Picture Tube:** 25″ (diagonal). **Viewing Area:** 315 sq. in. **Deflection:** Magnetic, 90 degrees. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna Input Impedance:** VHF: 300 Ω balanced or 75 Ω unbalanced; UHF: 300 Ω balanced. **Tuning Range:** TV channels 2 through 83. (Preset any 16). **Picture IF Carrier:** 45.75 MHz. **Sound IF Carrier:** 41.25 MHz. **Color IF Subcarrier:** 42.17 MHz. **Sound IF Frequency:** 4.5 MHz. **Video IF Bandwidth:** 4.08 MHz, at 6 dB down. **Hi-Fi Output: Output Impedance:** 2200 Ω. **Frequency Response:** ±1 dB, 50 Hz to 15 kHz. **Harmonic Distortion:** Less than 1% at 1 kHz. **Output Voltage:** greater than 1.0V rms. **Audio Output: Output Impedance:** 4 Ω or 8 Ω. **Output Power:** 2 watts. **Dimensions:** 20⅛″ H x 29⅛″ W x 21¾″ D. **Power Requirements:** 110 to 130 volts AC, 60 Hz, 200 watts. **Net Weight:** 112 lbs.



Deluxe Ultrasonic Remote Control for GR-2000 and GR-2050

Provides armchair control of on and off, volume, channel selection, color intensity and tint, activation of digital readout. Includes receiver for in-chassis mounting, hand-held transmitter. Operates up to 20 ft. away from set.

Kit GRA-2000-6, Shpg. wt. 4 lbs. **99.95**

Digital Clock for GR-2000 and GR-2050



Shows time in hours, minutes and seconds with big, easy-to-read white numerals. Real convenience!

Kit GRA-601,
Shpg. wt. 1 lb. **35.95**

SAVE $50 from '76 price

GR-2050 21″ (Diagonal) Color TV Kit

Now the popular 21″ diagonal Heathkit GR-2050 is also at a new low price! SAVE $50 and give yourself and your family a lifetime of entertainment! Has the same outstanding features and specifications as the GR-2000 (see complete description on previous page), but in the popular size 21″ diagonal measure screen. Uses the same optional on-screen digital clock and remote control as the GR-2000. And it has the same bright and accurate color picture. You can order your choice of space-saving contemporary cabinet (shown in major illustration), or a luxurious Mediterranean style cabinet (below).

Building the GR-2050 is a rewarding experience too. There are many modular circuits and coded wiring harnesses keep point to point wiring to a minimum. Has built-in service and adjustment circuits too — dot generator, service circuit board, centering and pincushion circuits — so you can keep it in peak operating condition.

Kit GR-2050, With chassis, picture tube, one speaker.
Shpg. wt. 122 lbs., Motor Freight ..... **Was 629.95 Now Only 579.95**

Optional Remote Control for GR-2050. Described at left.

Kit GRA-2000-6, Shpg. wt. 4 lbs. **99.95**

Optional on-Screen Digital Clock for GR-2050. Described at left.

Kit GRA-601, Shpg. wt. 1 lb. **35.95**

GR-2050 SPECIFICATIONS: Same as GR-2000 at left, except, **Picture Tube:** 21″ (diagonal measure). **Viewing Area:** 226 sq. in. **Dimensions:** 18¾″ H x 26⅝″ W x 19¼″ D.

Space-saver Contemporary Cabinet for GR-2050. (Shown in illustration above). Fully assembled and finished with wood solids and veneers, walnut-stain finish, black foam grille. 28⅝″ H x 30½″ W x 18½″ D (22 1/16″ W with cup).

GRA-2050-1, Shpg. wt. 74 lbs., Motor Freight **134.95**

Deluxe Mediterranean Cabinet for GR-2050



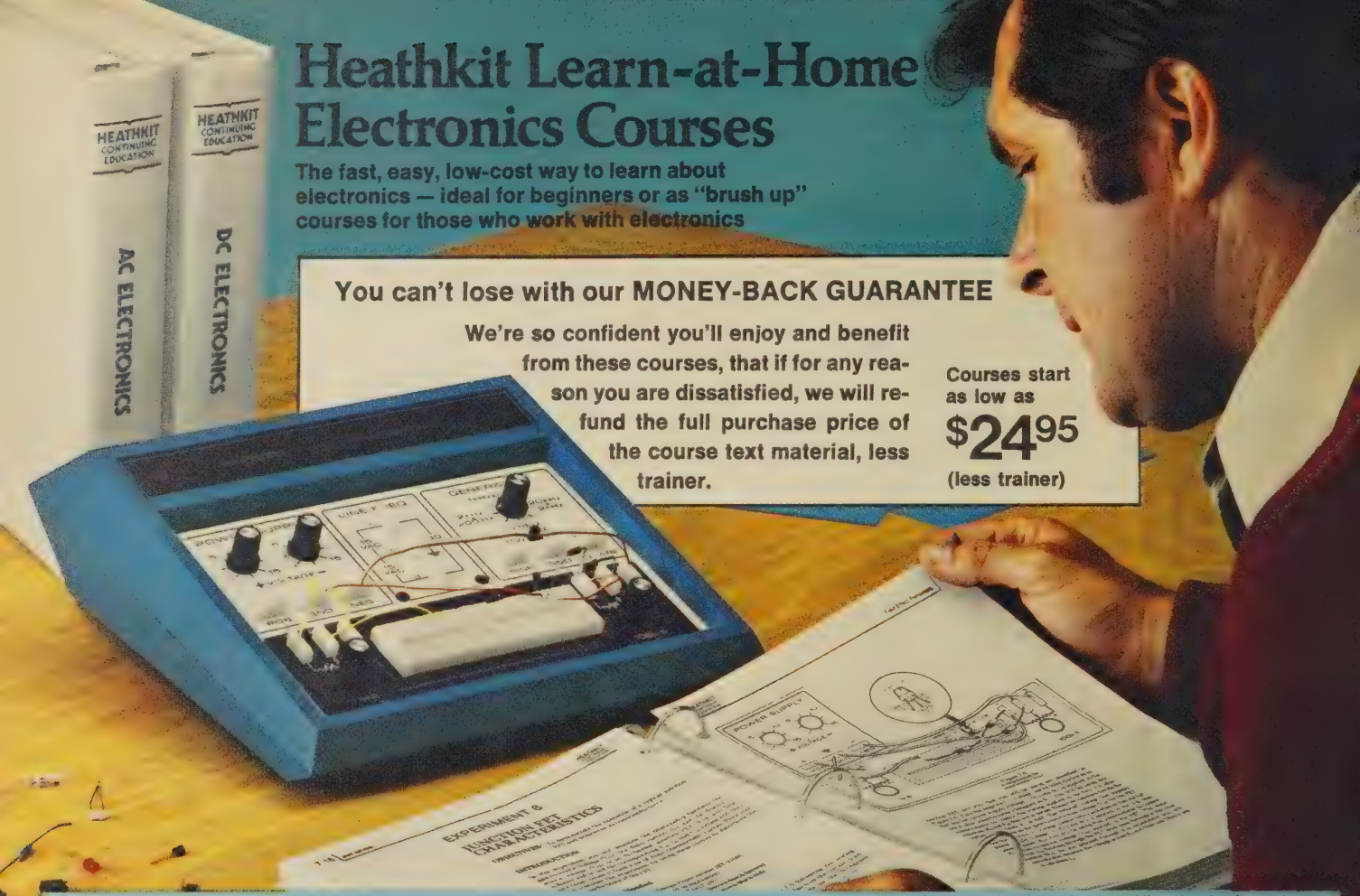
This romantic and stylish "home" for your GR-2050 is fully assembled and constructed of wood solids and veneers, with handsome dark-oak stain highlights and simulated wood-grain trim. Brown grille cloth. 28⅞″ H x 38⅝″ W x 19¾″ D (23 5/16″ D with cup).

Shpg. wt. 89 lbs.

GRA-2050-2, Motor Freight **174.95**

Heathkit Learn-at-Home Electronics Courses

The fast, easy, low-cost way to learn about electronics — ideal for beginners or as "brush up" courses for those who work with electronics



You can't lose with our MONEY-BACK GUARANTEE

We're so confident you'll enjoy and benefit from these courses, that if for any reason you are dissatisfied, we will refund the full purchase price of the course text material, less trainer.

Courses start as low as **$24.95** (less trainer)

Thousands of people just like you have already learned electronics the easy Heathkit way — and you can, too. The secret is our efficient approach to self-learning with easy, step-by-step "programmed" instructions; audio records to introduce and reinforce key concepts; self-evaluation quizzes to test your understanding; and interesting experiments that let you learn the easy "hands-on" way. All you need is a record player, small tools and a VOM. The optional Heathkit experimenter/trainer is specifically designed to help you do the experiments in each course, and when you finish the course, you can use it to design your own circuits. After completing each course, you can take the optional final exam (passing grade 70%) and receive both a Certificate of Achievement and Continuing Education Units, a nationally recognized way of acknowledging participation in non-credit adult education.

These four basic courses will provide you with an

Course 1: DC Electronics

An ideal introduction to electronics

Covers current, voltage, resistance, magnetism, Ohm's law, electrical measurements, DC circuits, inductance and capacitance — provides a detailed survey of basic electronics.

Discusses matter, atoms, current flow, voltage rises and drops, series and parallel connections, magnetic fields, voltage, dividers, network theorems, time constants and more. Includes all texts, records and 56 parts for 20 different experiments. Average completion time, 20 hours. 2.0 Continuing Education Units and certificate for passing final exam (passing grade 70%).

Course EE-3101, Shpg. wt. 6 lbs. **39.95**
EEA-3101, Optional Cassettes*, Shpg. wt. 2 lbs. **6.95**
SAVE $9.95! EES-3101, Program with Kit Trainer.
Shpg. wt. 17 lbs. **94.95**

Course 2: AC Electronics

Explains basic theory of alternating current

Covers alternating current, AC measurements, capacitive and inductive circuits, transformers and tuned circuits — requires completion of course 1 or equivalent knowledge.

Discusses waveforms, period and frequency, meters, scopes, series and parallel circuits, RC filters, dividers, phase shifts, reactance, vectors, transformer theory and more. Includes text, records and 16 parts for 8 different experiments. Average completion time, 15 hours. 1.5 Continuing Education Units and certificate for passing optional exam (passing grade 70%).

Course EE-3102, Shpg. wt. 6 lbs. **39.95**
EEA-3102, Optional Cassettes*, Shpg. wt. 2 lbs. **6.95**
SAVE $9.95! EES-3102, Course with Kit Trainer,
Shpg. wt. 17 lbs. **94.95**

***Optional Cassettes duplicate material on records, but in convenient, easy-to-use cassette format.**

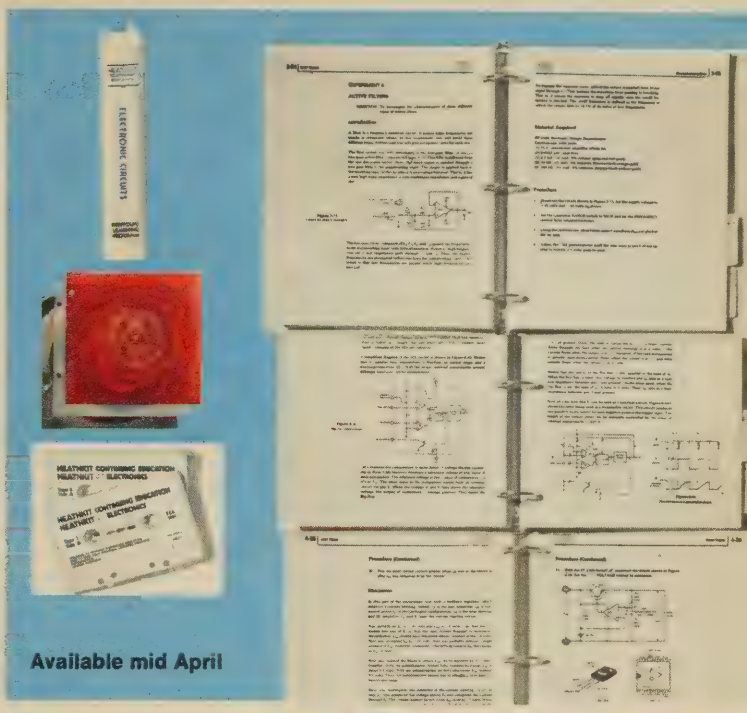
SAVE $29.80! Order all four basic courses

New Electronic Circuits Learn-at-Home Course

Covers basic amplifiers, typical amplifiers, operational amplifiers, power supplies, oscillators, pulse circuits, modulation and demodulation with emphasis on integrated circuits — requires completion of courses 1 through 3 or equivalent knowledge.

Course 4: Electronic Circuits

Explains the operation of all the most common electronic circuits



Available mid April

The final course of our basic electronics program — provides the practical, "hands-on" knowledge you need for electronic circuit design and development

Discusses amplifier functions and configurations, class of operation, audio characteristics, video amplifiers, buffers, IF's, rectifiers, voltage multipliers, voltage regulation, basic oscillators, RC waveshaping, clipping, AM, FM and SSB, modulation fundamentals and more. Requires an oscilloscope (such as the Heathkit IO-4560 or IO-4541) for some experiments. Includes text, records, and over 110 parts for 18 different experiments. Average completion time, 40 hours. 4.0 Continuing Education Units and certificate for passing final exam (passing grade 70%).

Course EE-3104, Shpg. wt. 8 lbs. **49.95**
EEA-3104, Optional Cassettes*, Shpg. wt. 2 lbs. **6.95**
EES-3104, Course with Kit Trainer, Shpg. wt. 17 lbs. **109.95**

Heathkit Basic Experimenter/Trainer Kit

$64.95 Kit



For the Heathkit DC, AC, Semiconductor and Electronic Circuits courses — helps you perform each project quickly and easily. And after you finish the course, it's ideal for "breadboarding" your own design projects. Has solderless breadboarding sockets, 2-range variable sine and square wave signal source, dual-variable power supplies for positive and negative voltages (both variable over 1.2 to 16 volts, 120 mA, both regulated and short-circuit protected), 1k and 100k linear potentiometers. Center tapped transformer provides 30 V rms, 60 Hz for line experiments.

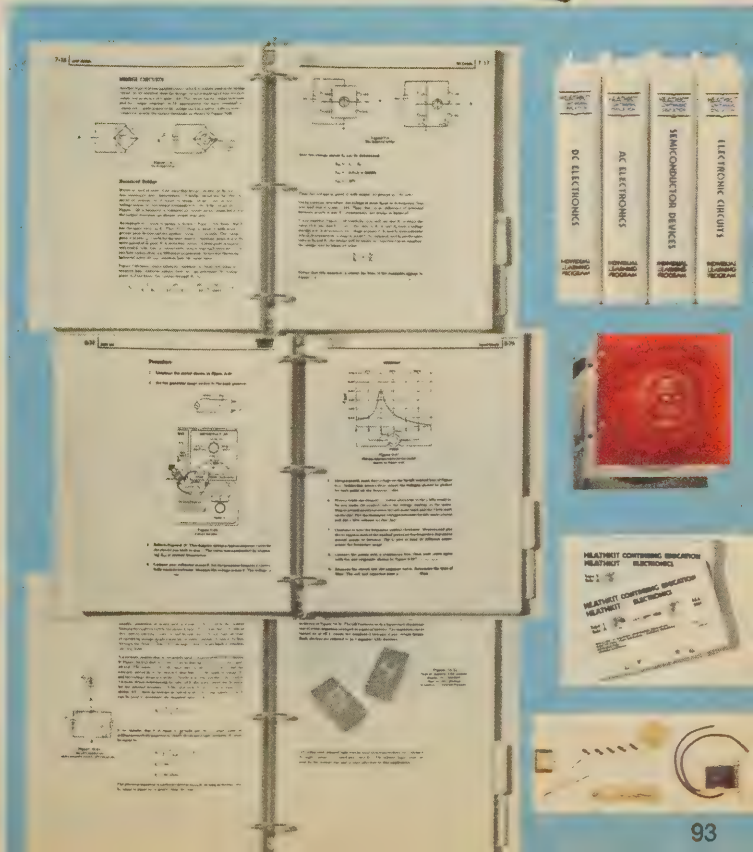
Kit ET-3100, Shpg. wt. 5 lbs. **64.95**
ETW-3100, Factory Assembled Trainer. Shpg. wt. 5 lbs. **99.95**

overview of contemporary electronics

Course 3: Semiconductor Devices

Essential for understanding solid-state equipment

Covers fundamentals, diodes, zener diodes, special diodes, bipolar transistor operation and characteristics, FET's, thryistors, IC's and optoelectronics — requires completion of courses 1 and 2 or equivalent knowledge.



Discusses holes, current flow, N and P types, biasing, tunnels, and varactors, PIN, IMPATT, bipolar transistors, gain, cutoff and leakage current, FET's, SCR's, light sensitive and light emitting devices, more. Includes text, records and 27 parts for 11 different experiments. Average completion time: 30 hours. 3.0 Continuing Education Units and certificate for passing final exam (passing grade 70%).

Course EE-3103, Shpg. wt. 6 lbs. **39.95**
EEA-3103, Optional Cassettes*, Shpg. wt. 2 lbs. **6.95**
EES-3103, Course with Kit Trainer. Shpg. wt. 17 lbs. **94.95**
SAVE $29.80! ETS-3114. All four programs and trainer.
Shpg. wt. 31 lbs. **204.95**

and trainer together.

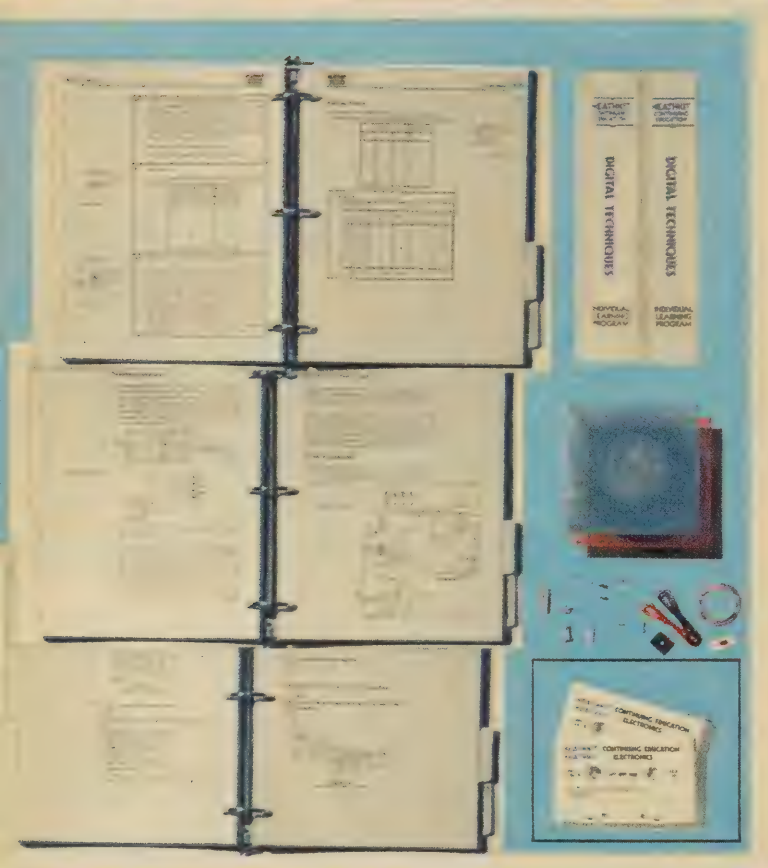
Advanced Digital Techniques Course



The course to take for a thorough understanding of modern digital electronics including microprocessors!

Only
$49.95
text, records and parts

Covers digital fundamentals, semiconductor devices for digital circuits, digital integrated circuits, Boolean algebra, flip-flops and registers, sequential logic circuits, combinational logic circuits, digital design and digital applications — requires completion of courses 1 through 4 or equivalent knowledge.



Heathkit Digital Techniques Learn-at-Home Course

Comprehensive learn-at-home course offers a thorough analysis of the latest digital techniques with particular emphasis on circuit design for the experienced technician, engineer or experimenter. Discusses TTL, ECL, CMOS, PMOS, NMOS; integrated circuits; SSI, MSI and LSI; ROM's, PLA's, microprocessors and computers, more. Shows you how to design digital circuits for virtually any modern electronic application. The program assumes a prior knowledge of electronics, either completion of the Heathkit basic electronics courses or equivalent. It can be successfully completed by technically-oriented people with a math or science background. Requires ET-3200 trainer to perform experiments. Includes text, records and 44 parts for 24 different experiments. Average completion time; 40 hours. 4.0 Continuing Education Units and certificate for passing optional final exam (passing grade 70%).

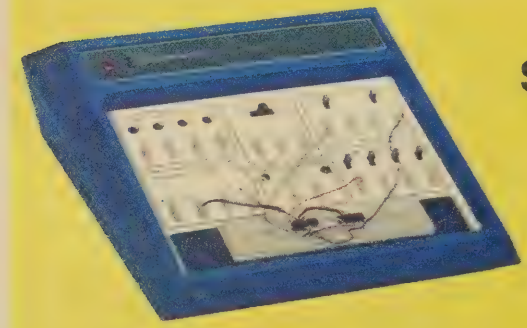
Course EE-3201, Shpg. wt. 9 lbs. **49.95**

EEA-3201, Optional Cassettes*. Shpg. wt. 2 lbs. **6.95**

Important Note: These courses and trainers may qualify for a Federal Tax Deduction. Treasury Regulation 162-5 permits an income tax deduction for educational expenses undertaken to: (1) maintain or improve skills required in one's employment or other trade or business, or (2) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status or rate of compensation. In many instances, your employer may re-imburse you in part or in total for taking these courses.

Order the digital techniques Learn-at-Home Course with Kit Trainer ET-3200. If purchased separately, 124.90.
EES-3201, Course and Trainer.
Shpg. wt. 20 lbs. **114.95**

SAVE $9.95
$114.95



Kit
$74.95

Heathkit Digital Design Experimenter/Trainer

Use it to perform all the experiments in the Heathkit Digital Techniques Course, also to develop projects, build and test prototypes, verify circuit operation, check digital IC's. Has solderless breadboard sockets, four binary data switches, 2 "no-bounce" switches to pulse logic circuits, 3-frequency pulse clock generator, 4 LED's for visual indication of logic states. Three regulated power supplies: +12 V, 100 mA current limited; −12 V, 100 mA current limited; +5 V, 500 mA, overload protected. Accommodates up to eight 14 or 16-pin dual-in-line IC's, also 24, 28 and 40-pin DIP's.

Kit ET-3200, Shpg. wt. 6 lbs. **74.95**

Factory assembled Trainer.
ETW-3200, Shpg. wt. 6 lbs. **109.95**

Ask us about quantity discounts on these programs.

Amateur Radio Novice License Course

From Heath — world leader in Amateur Radio Equipment — a learn-at-home course guaranteed to help you get your Novice ticket! In fact, it's so effective that if you fail to pass your FCC exam after completing the course — we'll REFUND your money for the course material!

$24.95 ***There's no better way to learn about Amateur Radio!***



Heathkit learn-at-home Amateur Radio Novice License Course

This basic Amateur Radio course was designed by the Hams at Heath to teach you all you need to know to get your Novice License. It's the ideal way to learn Amateur Radio for CB'ers, electronics hobbyists and experimenters, anyone interested in world-wide two-way Amateur Radio.

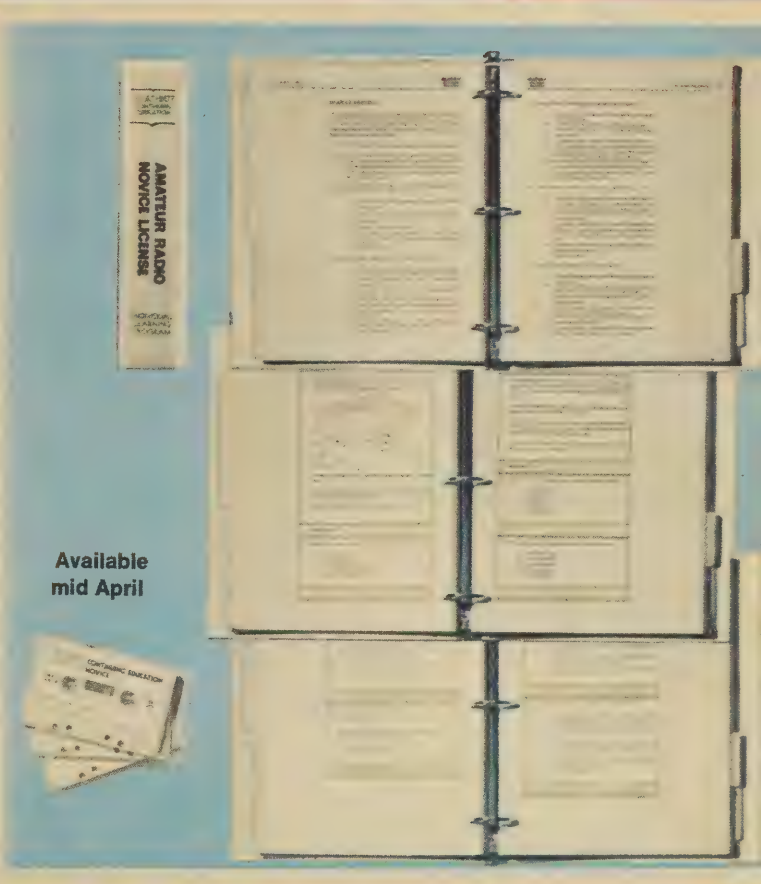
It employs the same, effective programmed techniques as in our other courses, so you can study and learn at your own pace. Covers rules and regulations, radio phenomena, operating procedures, emission characteristics, electrical principles, circuit components, practical circuits, antennas and transmission lines and radio communications practices. The course includes a programmed learning text and two audio cassettes to reinforce and personalize text material, and provide useful code practice.

Helpful operating aids include a glossary of common abbreviations, twelve most common Q signals, instructions for making your own antenna, international prefixes, Morse Code characters, a time zone cross-reference chart, a states check list, a wall-size full color frequency spectrum chart and a call area map of the United States. The course prepares you to take the Amateur Radio Novice FCC exam, and provides helpful guides for setting up and operating your own station once you pass the exam.

Course ER-3701, Shpg. wt. 6 lbs. **24.95**

SAVE $4.95! ER-3701 and HD-1416 Code Practice Oscillator, plus 10% discount certificate (see page 56). If purchased separately, $37.90.

ERS-3701, Shpg. wt. 8 lbs. **32.95**

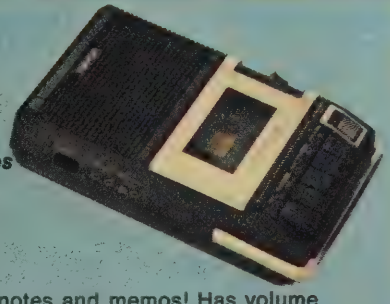


Available mid April

When you pass your FCC exam using this course you get BIG SAVINGS on famous Heathkit Amateur radio equipment. See page 56 for details!

Deluxe Cassette Recorder

$49.95 ***Play and Record your own cassettes***



The ideal cassette player for the Heathkit Continuing Education Series cassettes, even lets you record so you can make your own notes and memos! Has volume and tone controls, excellent voice response, easy cassette handling. 3" x 5⅞" x 10⅝". Battery-operated.

ECP-3800, Shpg. wt. 6 lbs. Assembled **49.95**

Heathkit Code Practice Oscillator

$12.95



Every Amateur has to know CW (code), and this is the way to learn it! Includes telegraph key, phone jack, built-in speaker, volume and adjustable tone control. Ideal for use with Amateur Radio Novice course above and a FUN TO BUILD first-time kit, too! Order with course above and SAVE! Read more about it on page 56.

Kit HD-1416, Shpg. wt. 2 lbs. **12.95**

Ask us about quantity discounts on these programs.

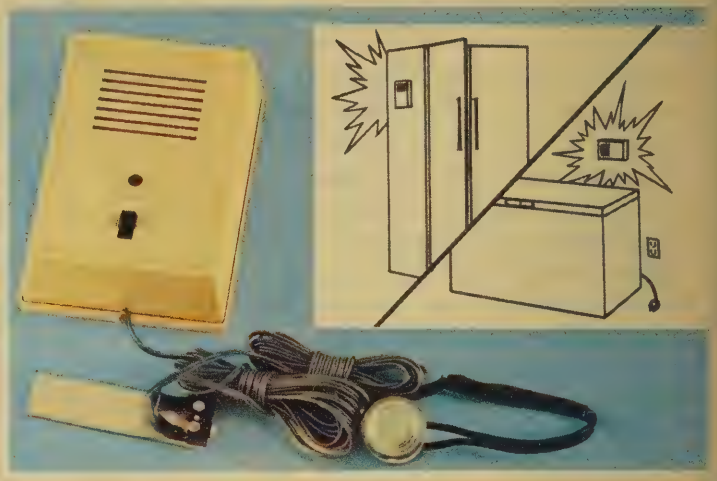
Look at these unique kits from Heath!



$14.95 "Touch-control" Light Switch puts power where you want it

One of the most convenient and practical kits we've ever offered — adds low-cost lighting versatility anywhere in your home! Gives you on-off switch control wherever you need it, without the bother and expense of extra outlets, wall boxes and rewiring. Even has a half-brightness position so you save energy and increase bulb life when you don't need full light. Consists of a control unit and a touch plate. Simply plug your lamp (up to 150 watts incandescent) into the control unit, plug the unit into an AC outlet. The remote touch-plate mounts anywhere and connects to the unit by an easily concealed wire. Then simply touch the plate briefly for half-bright, longer for full "on", and touch again for "off". We supply 20-ft. of wire, or you can use your own wire for longer runs. You can use more than one touch-plate too — or use any other metal — door knob, rail, etc. as a touch plate. Control unit 1 1/64" x 2 3/8" x 3 17/32". For 105-135 VAC, 60 Hz. An excellent kit for first-time builders and a practical, convenient addition anywhere in your home.

Kit GD-1187, Shpg. wt. 1 lb. **14.95**



$15.95 Freezer Alarm could save you hundreds of dollars

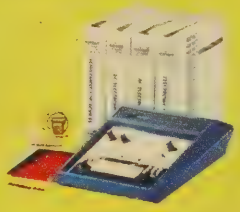
If you own a freezer — chest-type or upright, even smaller freezers in boats, campers or motorhomes — you NEED the GD-1183! Provides two-way protection for the contents of your freezer — it signals if the freezer door is left open; and it signals if freezer temperature reaches 20°F even though the door is closed. The dual-alarm system uses both an audible "beep" and a flashing light. The visual alarm is especially useful for mobile or commercial uses where high noise levels may mask the audible alarm. Has two alarm speeds — fast to indicate that freezer door is open, slow to indicate thawing even though door is closed. The alarm shuts off automatically when freezer temperature returns to about 10°F. The temperature and door sensors install easily in any freezer; the alarm box can be mounted by the freezer or in any convenient remote location (includes 20 ft. connecting cable). Battery operation — keeps working even if AC power fails. Low-current-drain circuit assures long battery life. Operates on two standard "C" cells (not supplied). Easy kit assembly too.

Kit GD-1183, Shpg. wt. 2 lbs. **15.95**

Learn-at-home Electronics Courses

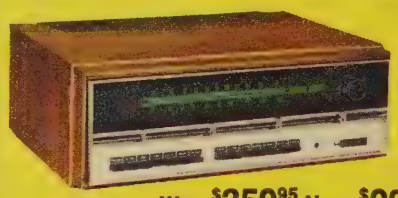
As low as **$24.95**

Two NEW courses — Electronic Circuits and Amateur Radio Novice License!



See pages 92-95 for complete details and MONEY-BACK GUARANTEE

SAVE $70 on famous AR-29 Stereo Receiver



Was $359.95 Now $289.95

SAVE an additional 5% on stereo systems



See page 37

NEW 40-channel CB Radios

JOHNSON · Royce · MIDLAND INTERNATIONAL

low as **$114.95**

See pages 52-53

Distinctive Name Plates



"Personalize" your Heathkit products. See page 40

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See index on page 3.

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For location of Heathkit Electronic Center nearest you, see p. 51.
Retail prices herein effective March 13, 1977. Printed in U.S.A.
Prices and specifications subject to change without notice.
Special offers and sale prices good thru June 3, 1977.

HEATHKIT

WINTER, 1976

Declare your Independence - with Heathkit products.

American craftsmanship starts at home - your home

New—matching stereo preamp & equalizer

New—digital IC tester

New—laboratory breadboard

New—4-band QRP transceiver

New—10 MHz dual-trace 'scope

and over 400 other electronic kits you can build and service



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See index on page three.

PAUL WING

Heathkit mail order catalog 807

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A new standard for versatility & value— Heathkit Digital Stopwatch—

Used by coaches and timers of the United States International Skating Association.

$99.95



Shown Actual Size

Rally Modification

In just a few minutes you can easily convert your GB-1201 into a six-digit stopwatch with readout in hours, minutes and *hundredths of minutes*—perfect for rallies and time studies!

Instructions are included in all new kits. If you already own a GB-1201, send a stamped, self-addressed envelope to: Technical Consultants, Heath Company, Benton Harbor, Michigan 49022.

A removable sunshield makes the GB-1201 easy to read even in sunlight.

Includes an AC adapter/charger, rechargeable batteries and lanyard.

Jacks let you start & stop the GB-1201 electronically by remote control.

7 functions, 8 digits, 1/100th of a second resolution & typical accuracy to ±0.003%!

All the range and accuracy you'll probably ever need — from just 1/100th of a second all the way up to 99 hours, 59 minutes, 59.99 seconds, with quartz-crystal precision. Two exclusive, Heath-designed PMOS IC counters give it versatility never before achieved. Its wide range of functions makes it ideal for almost any timing job — from navigating an airplane to timing a race. And you'll find dozens of every day uses for each function.

Function 1 — Start/Stop Elapsed Time — times any number of individual events while also counting total elapsed time from beginning of first event to the end of the last. Like two stopwatches in one — times two participants in the same event. Ideal for races.

Function 2—Sequential—times and displays each part of event (ex. each lap) while also timing overall event. Compare lap times of any participants while still timing overall event. Ideal for multilap races, navigation.

Function 3 — Total Activity Time — accumulates elapsed time for series of events. Also maintains separate count of total elapsed time including down time or breaks. Perfect for auto or plane trips, efficiency studies.

Function 4 — Split — displays cumulative time to each "split" point while continuing to time overall event. Useful in ski races, swim meets, sailboat race committees, etc.

Function 5 — Start/Stop Activity Time — shows separate times for each event or "leg", then totals all individual times. Great for trips, races, rallies.

Function 6—Upcount—counts to programmed or "learned" time then sends a trigger pulse to the alarm jack. Same number can be used repeatedly without reprogramming and count can be interrupted and resumed at any point. Perfect for tests, officiating, etc.

Function 7 — Downcount — counts from programmed number to zero, then sends trigger pulse to alarm jack. Count can be interrupted and resumed at any point. Ideal for yacht races, testing, officiating and helps athletes pace themselves in training.

Functions 6 and 7 are unique. The stopwatch can "learn" a time in one of the other functions, then transfer it to Function 6 or 7. Or program any time up to 9 hours, 59 minutes, 59 seconds using a clever digit-set method.

Start/stop jacks for photoelectric and relay circuits. Display switch turns the readouts off in functions 1-5 to conserve batteries and, in functions 2 and 4, switching off, then on, "unlatches" display to show counting process. After an event is finished, pressing the start/stop button alternately displays time in each counter. High-impact plastic case.

With care, even a novice kitbuilder can assemble the GB-1201 in two evenings or less. And in the value-conscious Heath tradition, its price is about half that of much less versatile electronic stopwatches.

Kit GB-1201, Shpg. wt. 3 lbs. **99.95**

ICA-2009-1, Felt-lined Naugahyde® carrying case, Shpg. wt. 1 lb. **3.95**

GB-1201 SPECIFICATIONS

Accuracy: ±0.006%, typically better than 0.003%. Instrument alignment provides higher accuracy. **Battery Life:** approx. 40 hrs. between charges with displays most off; approx. 4 hrs. with displays continuously on. **Recharging:** approx. 14 hours with power off. **Temperature Range:** −10° to +120°F. **Dimensions:** 5⅓" H x 2¼" W x 2" D. **Net Weight:** approx. 8 oz.

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit Telephone Amplifiers for convenient "hands free" conversations





Great for business and family "conference" calls

These two new telephone amplifiers make phone calls easier, more convenient than ever. And you can select one with or without a built-in dialer. In performance, features and value, they equal the best telephone amplifiers you can buy or rent.

To answer the phone, just press the Power button; to hang up, press it again. Voice-activated circuitry instantly and silently switches the GD-1112 and GD-1162 from talk to listen—without "clipping" words. An easy-to-use slide control adjusts the listening volume. Pressing the Listen button disables the built-in microphone, but still lets you monitor the line. That makes it a perfect "hold" button and more. When you talk through the handset of an external phone, pressing the Listen button allows others in the room to hear both sides of the conversation. To return your phone to normal operation, just turn the amplifier off.

Pick the model that's right for you. The GD-1112 requires an external phone to place calls while the GD-1162's built-in dial and electronic ringer let you use it with or without a regular telephone. Compact plastic case looks beautiful whether it's hung on a wall or placed on a desk.

And you can build either model in just a couple of evenings. The GD-1162's dial mechanism comes completely preassembled. The manual includes detailed information on installation. Requirements and rates vary, so check with your local phone company for details.

Kit GD-1112, Amplifier, Shpg. wt. 4 lbs., **49.95**
Kit GD-1162, Amplifier with dialer, Shpg. wt. 5 lbs. **69.95**
Kit GRA-43-1, AC converter, Shpg. wt. 1 lb. **4.95**

GD-1112/1162 Specifications

Microphone Range: up to 10 ft. **Power Requirement:** 9-volt battery or GRA-43-1 (not included). **Battery Life:** approx. 700 three minute calls. **Ringer:** GD-1162 only; may be disconnected for party line use. **Connectors Supplied:** GD-1112, ¼" phone plug and 4-pin telephone plug; GD-1162, 4-pin telephone plug and 15-pin dataphone connector. **Recommended Couplers:** QKT coupler for GD-1112; STC coupler for GD-1162. **Cable:** 6', 4-conductor. **Dimensions:** 2½" H x 8½" W x 5¾" D. **Net Weight:** 2 lbs.

Note: Customer-owned equipment connected to telephone company lines may be subject to local tariff.

handy index

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Heath helps you make

Declare Your Independence

1 Versatile, five-function weather station

Get yourself into the spirit of the new year with this elegant, informative weather monitor for your home. The Heathkit ID-1290 Weather Station monitors indoor and outdoor temperatures, barometric pressure, wind speed and direction — all with electronic accuracy and reliability. Uni/Mag barometer lets you observe changes as small as 0.02 inches of mercury. The thermometer is calibrated in two degree increments from —40 to +120° F and a switch selects indoor or outdoor readings. The windspeed indicator has two ranges — 0-30 mph or 0-90 mph and 8 wind direction lights offer true 16-point resolution.

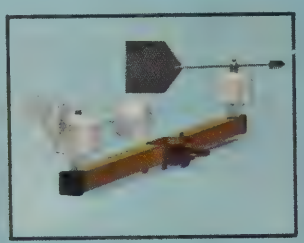
ID-1290's walnut-grained plastic cabinet can be hung vertically or horizontally; or use as a desk set with the stands included with the kit. The remote transmitter assembly (windcups, weather vane and outdoor temperature sensor) clamps onto any TV antenna mast and is connected to the plaque with optional 8-wire cable (below). Includes comprehensive weather book.

Kit ID-1290, Shpg. wt. 9 lbs. **89.95**

IDA-1290-1, 50 ft. cable, Shpg. wt. 2 lbs. **7.50**

IDA-1290-2, 100 ft. cable, Shpg. wt. 4 lbs. **13.50**

IDA-1290-3, 150 ft. cable, Shpg. wt. 6 lbs. **18.50**



The remote transmitter assembly for the ID-1290 and ID-1590 clamps easily to any TV antenna mast.



Digital Electronic Wind Speed and Direction Indicator

The Heathkit ID-1590 takes the guesswork out of knowing the wind speed and direction. Its outstanding accuracy and easy-to-read digital display makes this kit a "must" for pilots, boaters — anyone whose activities are affected by the wind. During construction, you pick the two readout modes you need from three available modes: miles, knots or kilometers per hour. Switches select mode and front-panel lights show which mode is in use. Incandescent bulbs mark the 8 principal compass points. Two adjacent bulbs can light simultaneously, providing 16-point resolution. The transmitter boom clamps onto any 1 to 1½" rooftop TV antenna mast and is connected to the receiver with optional cable. The rugged Cycolac® plastic case with teak-grain vinyl insert matches our GC-1094 Digital Clock and ID-1390 Digital Thermometer.

Kit ID-1590, Shpg. wt. 7 lbs. **69.95**

IDA-1290-1, 50 ft. cable, Shpg. wt. 2 lbs. **7.50**

IDA-1290-2, 100 ft. cable, Shpg. wt. 4 lbs. **13.50**

IDA-1290-3, 150 ft. cable, Shpg. wt. 6 lbs. **18.50**

ID-1590 SPECIFICATIONS

Wind Speed: 0-99 in miles per hour, knots or kilometers per hour (choice of two). **Response Threshold:** 3 mph. **Accuracy:** ±1 digit or ±10%, whichever is greater. **Direction Response Threshold:** approx. 2 mph. **Operating Temperature:** Remote transmitter, —40 to +120°F; Receiver, 0 to +150°F. **Power Requirement:** 120 VAC, 50/60 Hz, 6.5 watts. **Dimensions:** Receiver, 2½" H x 7" W x 5" D; Remote transmitter, 30" boom.

1 Five-Function Weather Station

it easy to keep tabs on time and weather

charg-a-kit



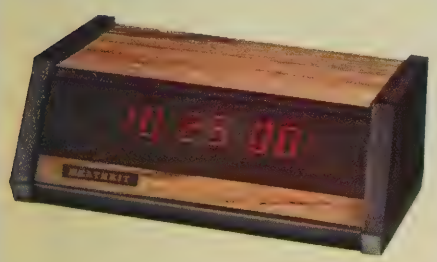
Digital Electronic Indoor/ Outdoor Thermometer

You'll never have to "gauge-guess" again when it comes to reading a thermometer. The ID-1390 monitors indoor/outdoor (or any two temperatures) with big, bright, easy-to-read digital readout. Switches select either Fahrenheit or Celsius readings and let you choose continuous readings of one temperature or alternate readings of both. The 85′ of cable included with the sensors permits a variety of custom applications — home freezer, hot house, garage, basement, pump house, swimming pool, aquarium, almost any temperature. Black Cycolac® plastic case with teak-grain vinyl inserts matches the GC-1094 digital clock and ID-1590 digital wind speed/direction monitor.

Kit ID-1390, Shpg. wt. 5 lbs. **59.95**

ID-1390 SPECIFICATIONS

Temperature Range: Fahrenheit −40 to +120°; Celsius, −40 to +50°. **Accuracy:** Celsius, ±1°C from −15° to +50°C, ±2°C from −30° to −15°C. Fahrenheit, ±1°F from +20° to +120°F, ±2° from −30° to +20°F. **Power Requirement:** 110-130 VAC, 60 Hz, 4 to 6 watts approx. **Dimensions:** 2½″ H x 7″ W x 5″ D.



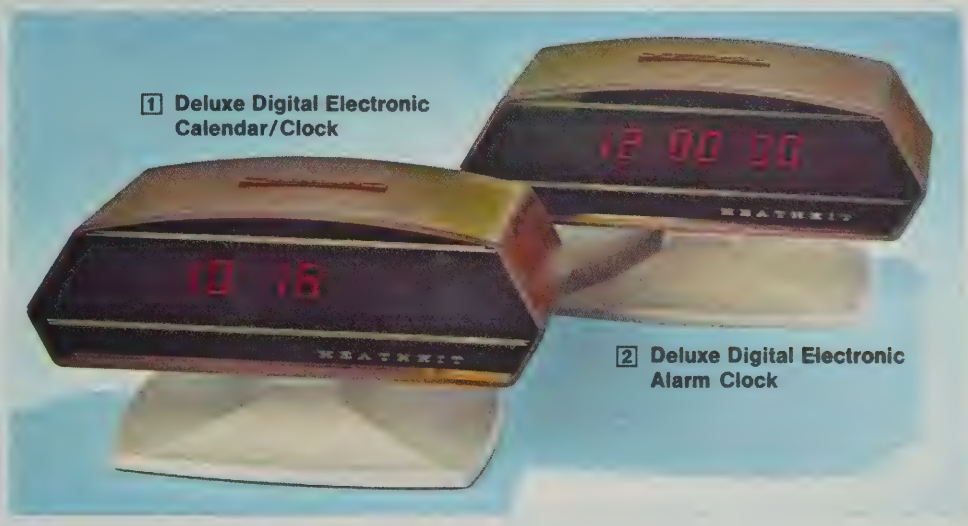
Budget-Priced Digital Electronic Clock

The GC-1094 makes waking up a little easier with a gentle electronic "beep." Take additional 7-minute catnaps, up to an hour. Should the power be interrupted for more than a few seconds, the display shows all "eights" until the clock is reset. An easy kit to build — most parts mount on two circuit boards. Can be wired for 12 or 24-hour readout.

Kit GC-1094, Shpg. wt. 4 lbs. **49.95**

GC-1094 SPECIFICATIONS

Accuracy: determined by line frequency. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 2½″ H x 7″ W x 4¾″ D.



1 Deluxe Digital Electronic Calendar/Clock

It won't take long for you to see that the GC-1092D is truly a quality digital timepiece. It not only brings you the time in hours, minutes and seconds in bright orange ½″-high 7-segment Beckman planar gas discharge tube digits — it also, automatically or at a touch, brings you the date in four digits for the month and day. Displays time continuously, or automatically displays the date two seconds out of every ten. Or, simply touch the case-top control to call up the date display for approximately five seconds any time you want it. 12 or 24 hour time format.

Stand-by battery supply takes over instantly in case of a power interruption. It also features automatic control of display brightness — bright in brightly lit areas, dim in dimly lit areas — and a switch is provided for a continuously bright display if desired.

A "hold" switch on the bottom panel makes it easy to time intervals or set the clock. A battery-save switch position disconnects the battery when clock is unplugged. A built-in charging circuit keeps nickel-cadmium batteries at full charge or you can wire the GC-1092D for non-rechargeable standard batteries. Whether you use it at the office, in the ham shack, or around your home, you'll find the GC-1092D the easiest way ever to keep on time and up to date. Easy-to-assemble, even if you've never built a kit before. Batteries not included.

Kit GC-1092D, Shpg. wt. 5 lbs. **79.95**

Learn more about these fascinating electronic clocks



Electronic Clocks and Watches — a complete guide to electronic timekeeping with sections on digital circuits, time-bases and more. Includes instructions for two projects.

EDP-201 . . . . . **6.50***

See page 48 for book ordering information.

2 Deluxe Digital Electronic Alarm Clock with standby battery power

You'll realize the GC-1092A is one of the world's finest digital timepieces the minute it wakes you with a gentle intermittent "beep." There are no switches or buttons to fumble for. Just touch the Heathkit "logo" on top of the case to turn off the alarm...electronically. The GC-1092A snooze alarm will let you enjoy up to an hour of 7-minute catnaps. Even if the power is interrupted during the night, a built-in battery power supply keeps the alarm — and you — on time, without the display. When AC power is restored, the correct time will once again be displayed, no need to reset the clock. If you wire the GC-1092A for nickel-cadmium batteries, a built-in circuit keeps them at full charge.

Its long list of timely features and low kit price make the GC-1092A an exceptionally good value. A convenient switch lets you select 12 or 24-hour (military) time format; an AM indicator light lets you set the alarm for either 9 AM or 9 PM; an automatic light sensor dims the display in dark rooms so it won't keep you awake at night and a battery-saver switch disconnects the batteries when the clock is unplugged for extended periods. Hours, minutes and seconds are displayed on big, ½″-high 7-segment Beckman planar gas discharge tubes for easy visibility. The handsome low-profile case in luxurious brown tones sits atop a removable pedestal base which swivels for easy viewing from any angle. Plug-in ICs and color-coded wiring make it an enjoyable kitbuilding experience. Less batteries.

Kit GC-1092A, Shpg. wt. 5 lbs. **79.95**

GC-1092A & GC-1092D SPECIFICATIONS

Power requirement: 120 VAC, 60 Hz, 7 watts. **Accuracy with AC line:** Determined by accuracy of power line frequency. **Accuracy with battery:** Depending on care in initial calibration, battery discharge curve, and temperature. **Dimensions:** 8⅜″ W x 4⅞″ D x 2½″ H (4″ H with pedestal). **Display:** 6 digits, 7 segment neon planar.



Heathkit do-it-yourself radios keep

AM/FM Digital Electronic Alarm Clock-Radio

Here's everything you could want in a quality clock-radio...at an affordable kit price. And the GR-1075 is truly unique...the only product of its kind.

Setting the pace for convenience in the GR-1075 is the all-electronic digital clock. It reads out the time in conventional 12-hour format with bright orange 7-segment Beckman planar gas discharge tubes. Displays AM or PM, too.

A lighted decimal pulsates to indicate seconds and also shows that the alarm is properly set. Readout features automatic brightness control.

The GR-1075's 24-hour alarm cycle offers a convenience factor you just won't find on conventional alarm clocks. Go to bed at 9 and set the alarm for 10, without being awakened in an hour. The alarm can be set to wake you with a gentle electronic pulsating "beep" (which can be changed in volume by the radio volume control)...or by the soft music from the FM or AM radio station of your choice. The 7-minute snooze cycle feature is repeatable for up to an hour.

Two 9-volt batteries (not supplied) take over during a power interruption and keep the clock counting, without the display — when power is restored the clock is "on time" and the alarm will go off at the set time.

On the front panel are finger-flip switches for on/off; AM/FM selection; radio or electronic alarm; "wake-up" alarm set; 'Snooze" cycle; plus volume and AM/FM tuning controls.

Black plastic cabinet with simulated brushed aluminum front panel trim strip, and simulated walnut-grain vinyl end panels.

Kit GR-1075, Shpg. wt. 10 lbs. **129.95**

GR-1075 SPECIFICATIONS

FM: Tuning Range: 87.5 MHz - 108.5 MHz. **IF:** 10.7 MHz. **Sensitivity:** 5 μV @ 30 dB quieting. **AM: Tuning Range:** 525 kHz - 1650 kHz. **IF:** 455 kHz. **Sensitivity:** 300 μV/M @ 20 dB quieting. **GENERAL:** Dial: 4½" backlighted neon arc orange; 4" pointer travel. **AUDIO: Output:** 1 watt. **Speaker:** 3" x 5" oval, 40 ohm. **Power input:** 120/240 VAC, 50/60 Hz; 17 watts max.; clock, 7 watts. **Dimensions:** 4¼" H x 13⅜" W x 8⅛" D.



Budget-Priced, Solid-State AM/FM Table Radio

Your search for a good value in table radios should start right here...in fact, the GR-48 is a great radio to get you started in kit building, too.

You'll have the obvious enjoyment of both AM and FM listening, plus a list of features to assure you of quality radio entertainment. An Automatic Frequency Control eliminates signal drifting and keeps your GR-48 tuned to the station you select. The Automatic Gain Control maintains the AM volume level you select. Built-in AM and FM antennas and an easy-to-read, backlighted tuning dial round out the GR-48's feature package. 5¼" H x 10" W x 4⅞" D.

Kit GR-48, Shpg. wt. 5 lbs. **43.95**

The Heathkit AM/FM Table Radio with Component Quality Performance

The entertaining GR-1085 puts top performance and sophisticated system-type circuitry into a unitary table radio package...to deliver a roomful of clean, clear monophonic sound of the quality you expect from a high fidelity system. A sensitive tuner, ceramic filters and separate tone controls, assure you of a clean, tailored sound from your favorite station. A simplified circuit design makes the GR-1085 a joy to build, with only minimal adjustments. Luxurious cabinet covered with simulated teak-grained vinyl.

Kit GR-1085, Shpg. wt. 19 lbs. **99.95**

POWER OUTPUT: 5 WATTS, MINIMUM RMS, INTO 8 OHMS AT LESS THAN 1.0% TOTAL HARMONIC DISTORTION FROM 60 HZ to 15 KHZ.

GR-1085 SPECIFICATIONS

AM: Sensitivity: 300 μV/M for 20 dB S+N/N. **Selectivity:** 40 dB alternate channel. **Hum & Noise:** 30 dB below 1 watt. **FM: Sensitivity:** 5 μV. **Selectivity:** 60 dB. **Hum & Noise:** 50 dB below 1 watt. **GENERAL: Power Requirement:** 120/240 VAC, 50/60 Hz, 25 watts. **Speaker:** 4½", 8 Ohm. **Dimensions:** 7" H x 13" W x 7½" D.



you entertained at home or on the go

Heathkit Solid-State AM/FM Portable Radio $46.95



Taking your own entertainment with you has never been easier than with the GR-17 Portable Radio. It's a great kit to build...just right for someone starting out because of its clean, open circuit design. And because we've packed so many quality features into the GR-17, it delivers the kind of listening enjoyment you just won't find in some other portables. The Automatic Gain Control keeps the AM volume level where you set it. And the Automatic Frequency Control locks onto the FM station you select.

The GR-17 is powered by six "D" cell batteries (not included) to give you hours of on-the-go entertainment. An optional AC converter lets you plug the GR-17 into any standard AC outlet. 6¾" H x 8¾" W x 4" D.

Kit GR-17, Shpg. wt. 6 lbs. **46.95**

GRA-43-1, Converter/Charger, 1 lb. . . . **4.95**

Solid-State AM Portable Radio anyone can build $15.95

A great kit for beginners. Goes together in a couple of evenings, and sings up a storm with big 3½" speaker & RF amplifier stage — unusual at this low kit price. Has AGC for constant volume, fixed ceramic filters for easy alignment. White & black plastic case measures a compact 4" H x 7⅞" W x 2" D. Operates on 9-V battery (not supplied). Get a youngster started in kit-building with this fun-to-build personal portable.

Kit GR-1008, 2 lbs. **15.95**





Solid-State AM Portable $32.95

Make this quality portable your constant companion when you're on the go. Attention to design detail will assure you of years of listening enjoyment. GR-24 operates on six "D" cell batteries (not included). Brown vinyl-coated fibreboard case. Anodized aluminum grill. 7" H x 8¾" W x 3¾" D.

Kit GR-24, Shpg. wt. 5 lbs. **32.95**



Solid-State AM Table Radio $26.95

The GR-28 is an ideal radio to start a kit-building career. Low kit-form price combined with all solid-state circuitry. Wide open design and simple step-by-step instructions make the GR-28 a joy to build. Gold plastic cabinet with brown grill. 5¼" H x 10" W x 4⅞" D. For 120 VAC.

Kit GR-28, Shpg. wt. 5 lbs. **26.95**

Do-it-yourself accessories for your car



Heathkit Digital Tachometer

The Heathkit CI-1079 is more responsive and accurate than ordinary meter-type tachs. The 2-digit electronic Beckman readouts sweep up to your engine's peak performance level. ½"-tall displays can be easily read even in direct sunlight. Dimmer control adjusts brightness for safe nighttime driving.

The CI-1079 helps you find the best operating RPM for just about every engine you own: the best cruising RPM for your car, your boat engine's most efficient speed, best prop selection, etc.

With 10 integrated circuits, you can build the CI-1079 in just two evenings. The black die-cast case with burl-grained vinyl insert matches the Heathkit Digital Car Clock and mounts on or under the dash. With conventional, CD or factory electronic ignitions, connect it directly to the primary side of the ignition coil. Optional inductive pickup for engines with magnetos or without access to the primary of the coil.

Kit CI-1079, Shpg. wt. 3 lbs. **49.95**

Kit CIA-1079-1, inductive pickup, Shpg. wt. 1 lb. **5.95**

CI-1079 SPECIFICATIONS

Power Requirements: 12 V, neg. gnd. only. **Readout Accuracy:** ±4% of reading, ±1 count. **Update Time:** 0.3, 0.2 or 0.15 seconds, depending on calibration point. **Applications:** 4, 6, 8-cyl. 4-cycle engines; 2, 3, 4-cyl. 2-cycle engines; 2, 3, 4-rotor Wankel engines. **Dimensions:** 1⅞" H x 4⅝" W x 4¾" D.



Use 'em together or separately to bring your car into the "Digital Age"

Digital Car Clock with 20-hour rally timer

The GC-1093 is totally electronic with a quartz-crystal timebase that insures high accuracy — typically within one minute per month. Hours and minutes are displayed on big ½" Beckman readouts bright enough to be read in direct sunlight, yet they dim automatically at night.

To start the GC-1093's elapsed timer, just press the reset button. For the first 20 minutes the readout displays the time in minutes and seconds and after that the readout is in hours and minutes up to 19:59. Pressing a button lets you display either clock time or elapsed time, while the other function continues counting in the memory. An AM or PM indicator lights up to show you're looking at clock time, rather than elapsed time.

To reduce the drain on your battery, the display fades out when you turn the ignition off, but the clock and timer continue counting. You can "recall" the display instantly even when the ignition is off by simply pressing a button. The splashproof, die-cast case with burl-grain vinyl insert includes hardware to mount the GC-1093 on or under the dash of your car, boat, camper, or motorcycle.

Kit GC-1093, Shpg. wt. 2 lbs. **64.95**

GC-1093 SPECIFICATIONS

Power Requirements: 10-17 VDC, neg. ground only. 300 mA max., display on. 30 mA max., display off. 4.5 volts minimum for clock memory. **Accuracy:** one min. per month, typical. **Temp. Range:** −30 to +60°C. **Format:** 12 hrs. with AM, PM and 20-hour rally timer. **Dimensions:** 1⅞" H x 4⅝" W x 4¾" D. **Weight:** 3 lbs.

Heathkit Auto Intrusion Alarm lets you build security into your car



The GD-1157 protects your entire car — engine, trunk and passenger compartment — from would-be thieves by sounding your car's horn intermittently or triggering the optional siren.

Alarm Unit mounts almost anywhere on car. System can be armed or disabled by a convenient underdash switch. Controls let you enter or leave the car without triggering alarm. With system armed, alarm sounds instantly whenever hood or trunk is opened. Alarm sounds for approximately two minutes, then resets and repeats the two-minute alarm cycle.

Once the alarm sounds, the only way to disable the system is to flip Set/Reset Switch on concealed Alarm Unit. And once the passenger compartment alarm has sounded, the entry delay is defeated — further attempts to enter the car will instantly trigger the alarm. So, when you return to your car, you'll know it's been tampered with.

The optional GDA-1157-2 Horn Relay adapts the GD-1157 to cars whose horns do not use a relay or use a plug-in relay. The optional GDA-1157-1 Siren Adapter provides an attention-getting "yelping" sound louder than an ordinary car horn. Complete installation instructions included.

1 **Kit GD-1157,** Shpg. wt. 3 lbs. **24.95**

2 **Kit GDA-1157-1,** Optional Siren Adapter, Shpg. wt. 2 lbs. **19.95**

Kit GDA-1157-2, Optional Horn Relay (not shown), Shpg. wt. 1 lb. . . **2.95**

GD-1157 SPECIFICATIONS

Exit and Entry Delay Times: adjustable from 5 to 15 seconds. **Alarm Device:** auto horn or optional siren. **Temperature Range:** −4° to +140°F. off. **Power Requirement:** 12 VDC, negative ground only. **Current Drain:** negligible when system is armed but not triggered. **Dimensions:** 2⅛" H x 4¾" W x 5" D.

12" screen Professional Ignition Analyzer



Heathkit CO-2500 does everything the professional analyzers do ...costs up to $1000 less...kit or assembled.



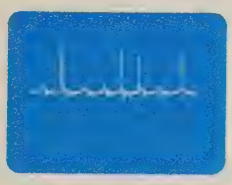
Defective coil or condenser



Incorrect dwell time



Distributor cam wobble



Low firing voltage



The CO-2500 requires only four simple connections to an operating engine. Included with the kit is an easily assembled cable with three clamps and a handy inductive pickup for easy connections.

The new Heathkit CO-2500 Ignition Analyzer has everything you need to professionally tune your car's ignition. It does everything any other professional analyzer can do — and more. And it costs up to $1000 less! It's a complete large screen analyzer in a compact package with all controls Heath-engineered for maximum ease of operation. It will provide all the information you need to tune standard (Kettering) transistorized or capacitive discharge ignition systems — even the high energy systems in new cars. Included are features like automatic cylinder selection (a Heath exclusive) for correct tachometer readings and Power Balance testing to isolate single cylinder performance. You can test your car's engine for plug and breaker point gaps, defective coil, condenser and plugs...indicate cam wobble and distributor problems...measure dwell angle for easy adjustment...find fouled or shorted plugs...find faulty spark plug wires...indicate incorrect primary or secondary ignition voltage...incorrect power balance...and identify many other ignition electrical problems. Included is an adaptor for use with the new high energy GM ignition systems. The optional timing light allows you to check and adjust ignition timing for maximum performance and economy. The optional alternator adaptor will help identify faulty alternator diodes, windings or stator.

The large 12-inch screen provides a bright trace that can easily be seen from a distance. The screen graticule has easy readability with two calibrated primary and secondary voltage grids and dwell indication for 3, 4, 6 and 8 cylinder or 2-rotor Wankel engines.

Cylinder selection is automatic with the CO-2500. The tach always reads correctlly because there's no need to adjust for number of cylinders. The SUPERIMPOSE pushbutton produces a display that represents all of the cylinder patterns simultaneously—one on top of the other. When one of the SINGLE CYLINDER pushbuttons is pressed, the CO-2500 will display only the dwell pattern for that cylinder. The Power Balance feature of the CO-2500 can quickly pinpoint poor individual cylinder performance due to faulty valves or rings. A complete introduction to ignition analysis is described in the CO-2500 operating manual.

Kit CO-2500, 66 lbs., Exp./Frt. **379.95**
Assembled WO-2500, 62 lbs., Exp./Frt. **695.00**

Timing Light for your "2500"



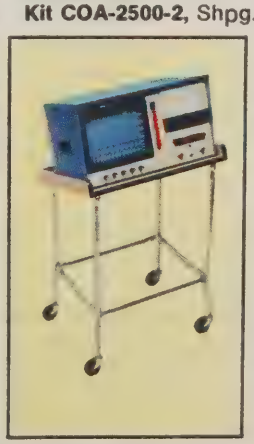
The COA-2500-1 solid-state timing light plugs into the CO-2500 and provides a flash that is many times brighter than the flash from timing lights that operate from only the spark plug voltage. Available kit or assembled.

Kit COA-2500-1, Shpg. wt. 3 lbs. **19.95**
Assembled WOA-2500-1, Shpg. wt. 3 lbs. **29.95**

"2500" Alternator Test Adaptor

Adaptor permits display of alternator charging system outputs to determine if the alternator has faulty diodes, shorted windings or shorted stator.

Kit COA-2500-2, Shpg. wt. 1 lb. **5.95**



"2500" Scope Cart

Keeps your CO-2500 mobile. Holds analyzer at just the right height for easy viewing when you're working under the hood. Rugged particle board steel tubing construction bolts together easily.

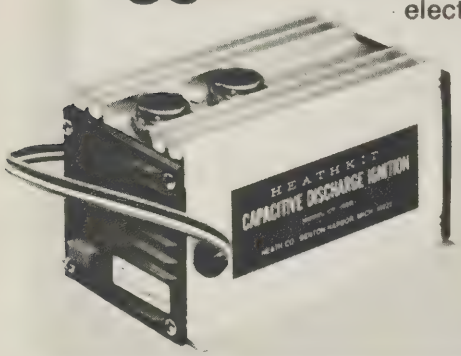
Kit COA-2500-3, 25 lbs., Exp./Frt. **34.95**

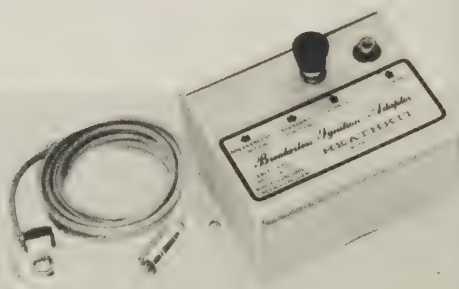
CO-2500 SPECIFICATIONS

Front Panel Controls: Scope: Intensity, Vertical Position, Vertical Gain, Horizontal Position, Trace Length. Secondary volts: 20 kV or 40 kV. Primary Volts: 40 V or 400 V. Parade or Superimpose. Power Balance or Single Cylinder (8 pushbuttons, plus "Cancel"). **Tachometer:** 1000 rpm, 3000 rpm, or 6000 rpm. **Voltmeter:** 18 VDC or 36 VDC. **General: For Use With:** Standard, transistorized, or C-D ignition systems. 3, 4, 6, or 8-cylinder (4 cycle), or 2-rotor Wankel engines. **Preset Controls:** Focus, Gain, Balance, Hi-Voltage, Tac Cal (Tachometer Calibration). **Cables:** Inductive pickup for parade and Timing Light Trigger. Direct connection to ground and primary. Calibrated capacitive secondary pick-up. **Signal Pickup:** Direct for primary, inductive for parade trigger, and capacitive for secondary. **Tachometer and Voltmeter Accuracy:** ±3% of full scale on any range. **Scope Vertical Expand:** Minimum 2 to 1. **Scope Horizontal Expand:** Sufficient to display a single cylinder full screen. **Power Requirements:** 110/130 or 220/260 VAC, 50/60 Hz. **Dimensions:** 12⅞" H x 22¾" W x 14⅛" D.

Make Your Car, Boat or Plane Safer

$39.95 Use the CP-1060 and the CP-1051 together for a top performing, totally electronic ignition system! **$44.95**





Heathkit CD Ignition System

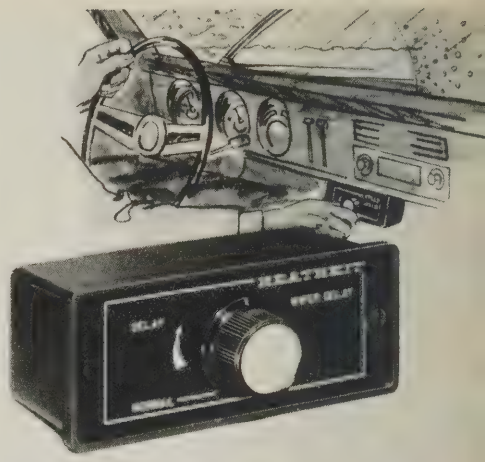
Gives improved performance, saves plugs, points, delivers up to 50,000 miles between tune-ups on cars, trucks, inboard I/O & outboard marine engines with conventional 12V battery/distributor/coil negative ground systems. Assures fast, sure starts in any weather, improved gas mileage! External override button switches to conventional system. Build it in a couple of hours, install in less than that. Mounts in wheel well or other convenient spots. Measures 3⅛" H x 3¾" W x 6" D. Not recommended for 1974 and 1975 cars in the state of California.

Kit CP-1060, Shpg. wt. 4 lbs. **39.95**

Breakerless Ignition Adaptor

Develops a timing signal that isn't subject to mechanical problems of point wear and bounce, maintains timing correctly at all speeds and for longer periods. Designed for use with capacitive-discharge ignition systems only (such as Heathkit CP-1060) the CP-1051 replaces the points of all pre-1975 GM V-8 and V-6 engines, and all AMC V-8s with external dwell adjustment (not for other models). The easy-to-build unit mounts inside engine compartment; sensor mounts inside the distributor, without removing points. Switch returns engine to normal.

Kit CP-1051, Shpg wt. 2 lbs. **44.95**



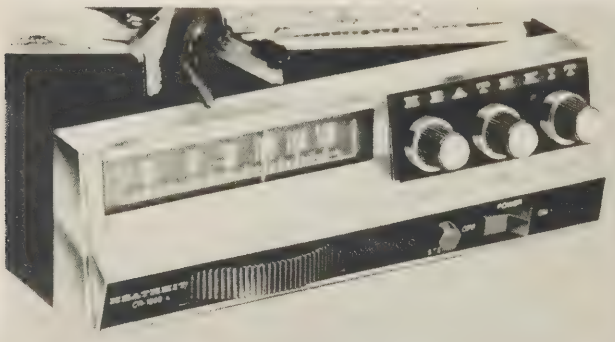
Heathkit Windshield Wiper Delay

Eliminates turning wipers on and off while driving in fog, mist, or light rain. A front panel control gives you selection of "normal" and "delay" modes. A preset control varies the number of sweeps, the front panel control varies delay time. An easy kit to build. The handsome one-piece molded plastic case mounts on or under the dash with adhesive strip or bracket. See compatibility specifications below.

Kit CH-1068, Shpg. wt. 2 lbs. **15.95**

CH-1068 SPECIFICATIONS

Delay interval: 5 to 30 seconds minimum. **Sweeps interval:** .5 to 10 seconds minimum. **Input voltage:** 13.8 volts DC, ±20%. Positive or negative ground. **Temperature range:** —30°C. to 65°C. —22°F. to 149°F. **Wiper System Compatibility:** (Electric Only) GM: All single and two speed systems. Ford: Most small and intermediate models. Not compatible with full size models or '72-'75 Torino, or Montego, '74-'75 Cougar. Chrysler: Single and two speed systems on small and intermediate models which do not use a motor reversing parking system. Ask dealer about your car's system. AMC: Single and two speed systems. Other models: Electric wipers which do not use a motor reversing parking system.





Heathkit Car Stereo FM Tuner

Enjoy stereo FM entertainment as you drive, with excellent fidelity. The improved Heathkit CR-1000A FM Stereo Tuner features a new Phase Lock Loop demodulator and improved circuit layout to bring you greater stability and separation, better AM rejection, and easier kitbuilding through simplified alignment procedures. Great specs too—less than 1% THD; frequency response ±1 dB, 30 to 15,000 Hz; 3 μV sensitivity; 60 dB selectivity; 40 dB nominal separation. Other features are: muting circuit for noise quieting between stations; AFC; Tuning, Volume, Tone & Balance controls; on-off switch; stereo indicator light. Requires power amp. (right) for operation.

Kit CR-1000A, Shpg. wt. 7 lbs. **69.95**

Kit CRA-1000-1, Power amp., fits back of tuner, for 12V battery. Shpg. wt. 3 lbs. **29.95**

[1] **CRA-1000-2,** 4½", 4-ohm door-mount hi-fi speakers (including grilles, adapter plates for most speaker size openings and 24' speaker lead).

Shpg. wt. 6 lbs. . . . . (pair) **14.95**

[2] **CRA-1000-5,** 6"x9" 4-ohm rear deck mount hi-fi speakers (including grilles and 24' speaker lead).

Shpg. wt. 7 lbs. . . . . (pair) **21.95**



With Case



Panel Mount

Solid-State Tachometer Kit

Indicates engine rpm, helps you determine shift points for best engine performance and efficiency. Build it for 6000 or 9000 rpm range, use it on 1-6 cyl., 2 cycle or 2-8 cyl. 4 cycle engines; 12V conventional, magneto, transistor or capacitive discharge ignition. Triggers from points or inductive pickup supplied. Wide angle 250° edge-lighted dial with white indicator, adjustable pointer, non-scratch glass face, black & chrome case or panel mount (panel mount requires 3¼" hole, 2¼" deep.)

Kit MI-18-1, panel model,
Shpg. wt. 3 lbs. **34.95**

Kit MI-18-2, with case,
Shpg. wt. 3 lbs. **39.95**



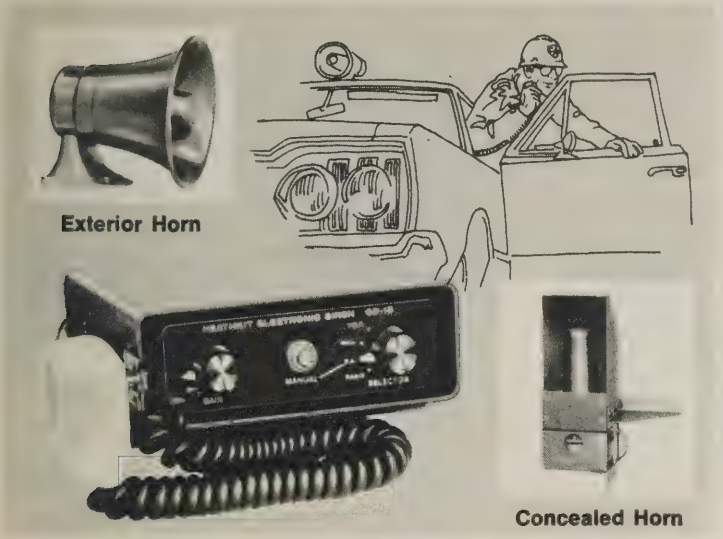
Find out about the latest in Ignition Systems

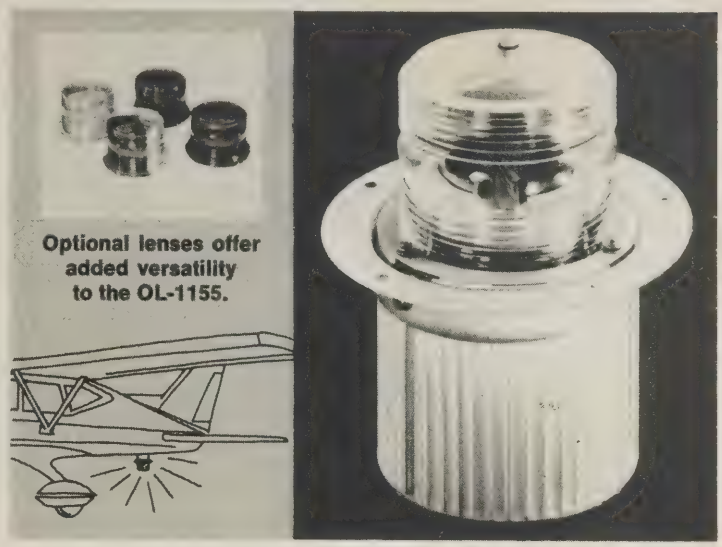
Solid-State Ignition Systems — explores all known commercially available methods, including Capacitive Discharge and breakerless systems; covers servicing and troubleshooting techniques. **EDP-185** **4.50**

See page 48 for book-ordering information.

Want faster service? Order by phone — call (616) 982-3411 day or night.

and More Enjoyable with These Heathkit Accessories





Kit or Assembled Siren/PA System

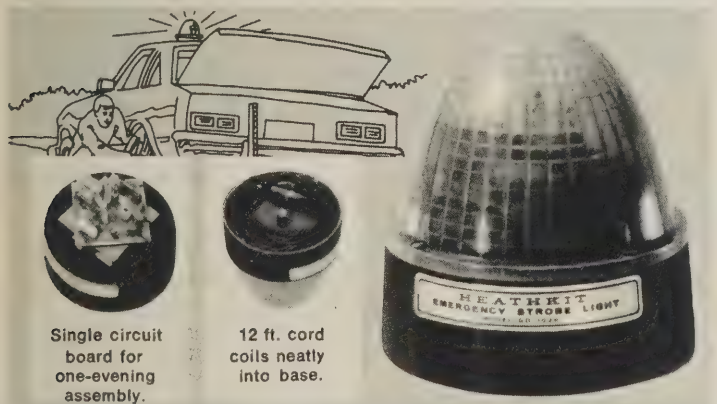
Heathkit Siren/PA System works as electronic siren at 55 watts; adjustable pitch. Packs 20 watts into a booming PA system; lets you hear radio calls away from your vehicle. Choice of speakers, concealed or exposed horn. Concealed speaker requires 4½″ x 4½″ x 13″ behind grille. NOTE: Please check the required standards for mobile sirens in your area.

Kit GD-18, Shpg. wt. 6 lbs. **64.95**
Assembled WD-5130, siren/PA amp, Shpg. wt. 6 lbs. **89.95**
Assembled GDA-18-1, exterior horn, Shpg. wt. 10 lbs. **62.95**
Kit GDA-18-2, concealed horn, Shpg. wt. 11 lbs. **62.95**
Assembled WDA-5130-2, concealed horn, Shpg. wt. 11 lbs. **74.95**

Buy a complete system and SAVE $7.95

If purchased separately, $127.90.Shpg. wt. 16 lbs.

GD-18A (GD-18 & Exterior Horn) **119.95**
GD-18B (GD-18 & Concealed Horn) **119.95**



Single circuit board for one-evening assembly.

12 ft. cord coils neatly into base.

Heathkit Emergency Strobe Light provides extra safety for nighttime driving

The Heathkit GD-1026 Emergency Strobe Light is a portable high-intensity arc discharge flasher specifically designed as a highway emergency warning or signal light. Just insert the adaptor plug provided into your car's cigarette lighter. A 12 ft. cord lets you place the flashing light in any spot on the car. Has non-marring magnetic base plate, highly visible flashing strobe with amber dome lens. The entire unit is constructed of high impact plastic that is both moisture and corrosion resistant. And the cord coils neatly into the base so that the unit can be stored away in the trunk, ready for instant use.

Kit GD-1026, Shpg. wt. 3 lbs. **29.95**

GD-1026 SPECIFICATIONS

Supply voltage range: 13.8 VDC ±20%. **Power consumption:** 5 watts nominal. **Flash voltage range:** 450 VDC ±20%. **Flash repetition rate:** greater than 1 per sec. **Operational temperature range:** −30°C to +60°C.

Heathkit Aircraft Strobe Light for aircraft, emergency vehicles, boats, markers

The OL-1155 is designed primarily as an aircraft strobe light for use as an anti-collision or supplemental beacon — and can be used as a direct replacement for standard 3¾″ rotating beacons. As an aircraft strobe light, the OL-1155 meets all requirements set forth in the Federal Air Regulation No. 23.1401 regarding Aircraft Anti-Collision Lighting. It operates from a 12 VDC negative ground supply. Average light output: 225 effective candle power. An internal adjustable trimmer lets you vary the flashing frequency of the strobe.

Ideal for marine foul-weather anti-collision protection; atop antennas and tall buildings; a highly visible marker light. Optional amber, red or blue lenses, below, for emergency vehicles or special applications.

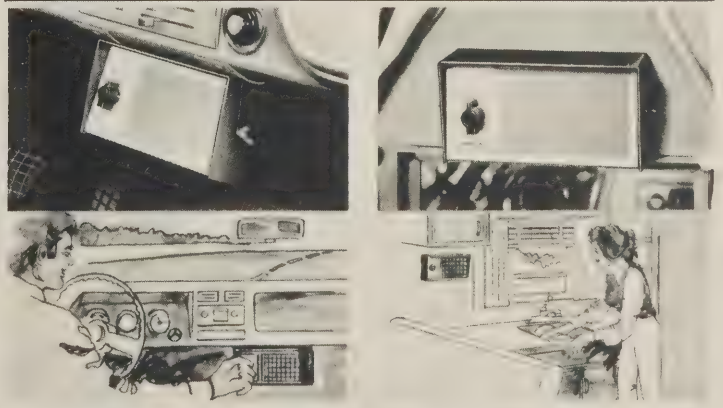
Kit OL-1155, (with clear lens), Shpg. wt. 3 lbs. **64.95**
***OLA-1155-1,** Red/clear lens, Shpg. wt. 1 lb. **11.95**
***OLA-1155-2,** Red lens, Shpg. wt. 1 lb. **8.95**
***OLA-1155-3,** Amber lens, Shpg. wt. 1 lb. **8.95**
***OLA-1155-4,** Blue lens, Shpg. wt. 1 lb. **8.95**

*Does not meet FAA requirements for Aircraft Anti-collision use.

NOTE: For the FAA PMA certification necessary for aircraft installation, return your completed OL-1155 to your local Heathkit Electronic Center or the Heath factory.

OL-1155 SPECIFICATIONS

FAA Design Approval: Under STC SA2719WE for all Cessna 182 aircraft prior to S/N 53599 & STC SA2720WE for all Cessna 210 aircraft prior to S/N 57481. **Power requirement:** 12 VDC negative ground only, 1.5A. **Dimensions:** 6″ H x 3 11/16″ diameter (mounting plate −5½″ diameter).

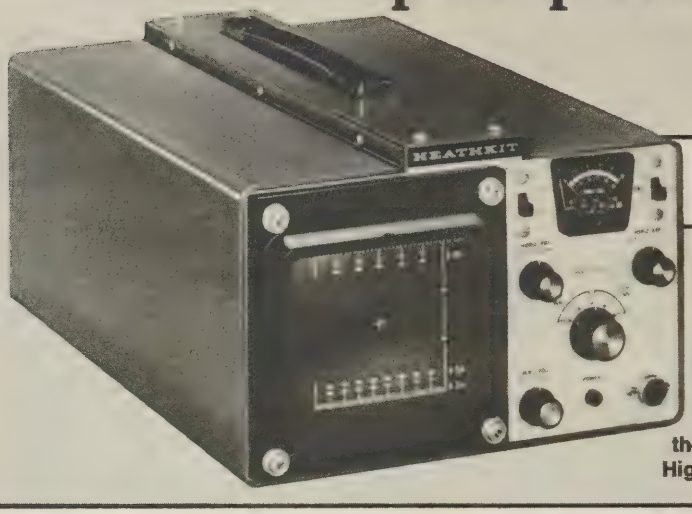


Heathkit Cab-to-Camper Intercom

3-position switch on Master selects "Stand-By", "Monitor", "Talk" modes. Remote has "Radio" position to bring music into camper from cab radio. Both Master and Remote can initiate calls. Requires 12-volt, 250 milliamp DC power source.

Kit GD-160, Master, Remote and cable,
Shpg. wt. 5 lbs. **29.95**
GDA-160-1, Accessory Plug, Shpg. wt. 1 lb. **4.50**

Improve performance, save money and save



$159.95



Optional adapter allows you to use the CO-1015 with GM High Energy Ignitions.



$64.95

Diagnose ignition problems on this 5″ scope

- ***Built-in rpm indicator***
- ***Clamp-on inductive pickup***
- ***Discover and solve most any ignition problems quickly***

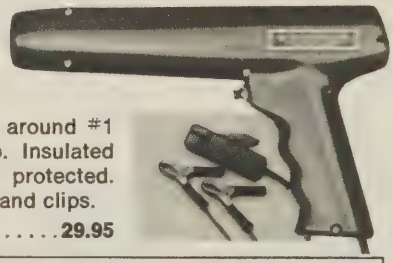
The Heathkit CO-1015 Ignition Analyzer detects shorted spark plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, coil, condenser or transistor or CD circuitry problems. Can be used with any standard, transistorized or capacitive discharge system on three, four, six or eight-cylinder engines. It features a built-in tachometer, constant pattern width circuitry. You select four different patterns — primary or secondary, in either parade or superimposed displays. For detailed analyses, horizontal sweep can be expanded 10 to 1, vertical sweep 2 to 1. The optional 12-volt inverter mounts permanently to the unit's rear panel. Operation handbook supplied, illustrates typical auto engine waveforms to aid in troubleshooting.

Kit CO-1015 Shpg. wt. 21 lbs. **159.95**
Kit COA-1015-1, 12V Inverter, Shpg. wt. 4 lbs. **32.95**
Kit COA-1015-2, G.M. HEI adapter, Shpg. wt. 1 lb. **3.00**

CO-1015 SPECIFICATIONS

Power Requirement: 120/240 VAC, 60/50 Hz, 16 W. **RPM Range:** 400-5000. **Cylinders:** 3, 4, 6 or 8. **Vertical Expand:** Approx. 2 to 1. **Horizontal Expand:** Approx. 10 to 1. **Sweep Length:** ±5% over entire RPM range. **Intensity:** Fixed. **Presets:** Focus, Astigmatism, Trigger Adjust, Tac Cal. **Connection Cables:** 12′ pick-up clamp; ground and secondary clip leads extend 2′ beyond pick-up clamp. **Tachometer:** 0-1000 RPM, 0-5000 RPM ±5% of full scale. **Dimensions:** 7″ H x 10½″ W x 17½″ D.

Deluxe Timing Light flashes brighter than daylight



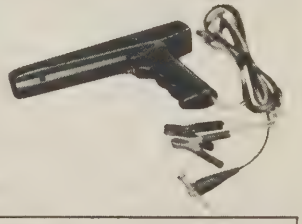
Handy inductive pickup snaps around #1 plug wire. Bright Xenon bulb. Insulated blue plastic housing. Polarity protected. Comes with all cables, pickup, and clips.

Kit CI-1040, Shpg. wt. 4 lbs. **29.95**

CI-1040 SPECIFICATIONS

Useful Light Range: Up to 2 ft. in daylight. **Engine Speed Range:** Full flash brightness up to 2000 rpm. **Triggering:** Current pickup coil. **Power Requirement:** 12 VDC battery or separate 15 VDC power supply. **Dimensions:** 6½″ H x 2″ W x 10″ L.

Economy Timing Light



Flash can be seen in direct sunlight. Easy to use; connect one cable to battery, the other to spark plug or distributor cap. Insulated housing, polarity protected. With all cables.

Kit CI-1020, Shpg. wt. 3 lbs. **19.95**

CI-1020 SPECIFICATIONS

Useful Light Range: Up to 2 feet in daylight. **Engine Speed Range:** Full flash brightness up to 2000 rpm. **Triggering Requirement:** Direct connection to number one spark plug of engine ignition system. **Power Requirement:** 12 VDC battery or 15 volt DC power supply. **Size:** 6½″ H x 2″ W x 10″ L.

Exhaust Gas Analyzer checks fuel efficiency

Monitors exhaust for minimum pollution & maximum efficiency by measuring thermal conductivity of gases. Shows air-fuel ratio combustion efficiency and percent carbon monoxide.

Kit CI-1080, Shpg. wt. 6 lbs. **64.95**

CI-1080 SPECIFICATIONS

Meter Scales (3): 11.5-15.0 Air-Fuel Ratio. 70%-90% Combustion Efficiency. 0-8% Carbon Monoxide. **Exhaust Type:** From 4-cycle gasoline engines. Not for use with catalytic converters. **Accuracy:** Within 1 Air-Fuel Ratio depending on fuel used. **Meter:** 4½″, 100-0-100 μA. **Connectors:** Battery cord, 7 feet. Sensor cord, 21 feet. Exhaust flexible tube, 30 inches. **Power Requirement:** 6-volt or 12-volt car battery, less than 150 mA. **Weight:** 4 lbs., 12 oz.

15-Amp Automatic Battery Charger



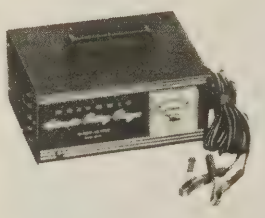
Has 50-amp boost. Use on negative or positive ground. Circuit breaker protection.

Kit GP-1044, Shpg. wt. 23 lbs. **57.95**

GP-1044 SPECIFICATIONS

Charge Rate at 120 VAC (primary): Boost; 50 amperes (maximum 1 minute). Normal; 15 amperes, decreasing to less than 2 amperes at full charge. **Output Voltage:** 14.5 volts. **Power Requirement:** 110 to 130 VAC, 60 Hz. **Dimensions:** 6⅛″ H x 11½″ W x 7¾″ D.

10-Amp Automatic Charger

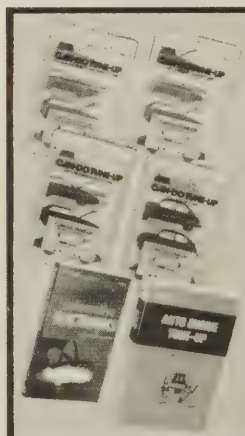


Won't start unless correctly connected. Won't overcharge.

Kit GP-21, Shpg. wt. 13 lbs. **36.95**

GP-21 SPECIFICATIONS

Charge Rate: 10 amperes maximum at 120 VAC line. **Output Voltage:** Between 13.2 VDC and 13.6 VDC. **Power Requirement:** 105-130 VAC, 60 Hz. **Dimensions:** 5½″ H x 9″ W x 6⅜″ D.



Save on maintenance with "Can-Do Tune-Up" guides — step-by-step instruction book & cassette tape

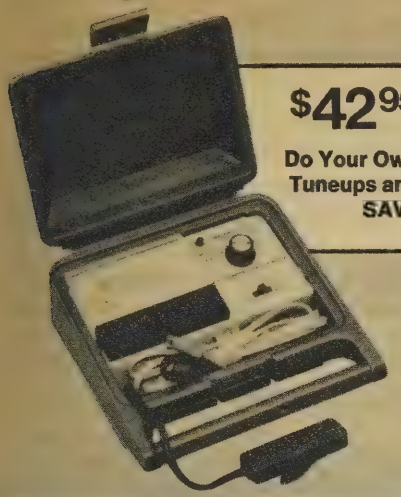
A completely new way to handle tuneups — an illustrated booklet gives you all the information you need and a cassette actually "talks you through" the important steps. Each book also includes information on periodic maintenance and a complete troubleshooting chart. For 1964-1974 6 and 8-cylinder engines.

EDP-204, GM vehicles **7.95**
EDP-205, Ford, Lincoln, Mercury vehicles **7.95**
EDP-206, Chrysler, Plymouth, Dodge vehicles **7.95**
EDP-207, VW vehicles **7.95**

Automotive Electronics — a look at the state-of-the-art, plus a complete explanation of your car's electrical & ignition system. **EDP-162** **6.95**
Auto Engine Tune-Up — a complete how-to-do-it guide to car engine tune-up, including carburetion & ignition. **EDP-163** **6.75**

Want faster service? Order by phone — call (616) 982-3411 day or night.

energy with Heathkit Auto Test Gear



$42.95
Do Your Own Tuneups and SAVE

$69.95 Kit



HEATH charg-a-kit REVOLVING CHARGE

Small Engine Tune-up Meter

Tests volts, ohms, dwell & continuity on 1 to 4 cylinder 2 & 4 cycle engines. Built-in tach, snap-on pickup. Less batteries.

Kit CM-1045, Shpg. wt. 5 lbs. **42.95**

CM-1045 SPECIFICATIONS

Voltmeter: 0-20 V DC. **Ohmmeter:** 0 to 100 kΩ (10 kΩ center scale.) **Tachometer:** Two ranges: 0-3000 rpm. 0-15000 rpm. **Dwell Meter:** Four scales: 1 cylinder; 90°-360°; 2 cylinder; 40°-180°; 3 cylinder; 30°-120°; 4 cylinder; 20°-90°. **Continuity:** Lamp indicator. **Operating Temperature Range:** 0°F-140°F with alkaline batteries. 32°F-140°F with zinc-carbon batteries. **Meter Accuracy:** Ohmmeter: ±3 degrees arc at 76°F, ±5 degrees arc at 0°F and 140°F. Other functions: ±3% at 76°F, ±5% at 0°F and 140°F. **Power Source:** Three 1.5 V C batteries. **Dimensions:** 9⅛″ H x 9⅜″ W x 5¼″ D.

GM Voltage Regulator-Tester



Shows condition of all 4 circuits in the GM Integral Charging System regulator. Optional test leads for under-hood testing.

CTW-1170, assembled form, 16 lbs. . . **99.95**

CTW-1170-2, optional external leads, Shpg. wt. 1 lb. **6.00**

CTW-1170 SPECIFICATIONS

Test Voltage: 16.5 VDC. **Sense Voltage:** Adjustable 0-17 VDC. **Voltmeter:** 0-20 VDC ±3%. **Short Circuit Current:** 0.1A. **Power Requirement:** 120 VAC, 60 Hz, 150W. **Case:** Aluminum. **Dimensions:** 7″ H x 11″ W x 7″ D.

Hanson Basic Tester Set



Helps you keep your car in top shape! Includes Model 714 Remote Starter Switch, Model 715 Deluxe Compression Tester, Model 709 Vacuum & Fuel Pump Tester. "Must" tools for every professional and amateur.

CGP-1036, Shpg. wt. 3 lbs. **11.95**

Using Electronic Testers for Automotive Tune-Up — Ideal companion to Heathkit electronic tune-up tools. **EDP-165** **4.95**

Modern Guide to Auto Tune-Up and Emission Control Servicing — tells in plain language how to tune your car for best gas mileage and lowest emissions. **EDP-166** **5.95**

Auto Repair Manual — Chilton's famous classic, covers U.S. cars 1967 to 1975. **EDP-168** **11.95**

Small Gasoline Engines Training Manual — theory, design & operation of every domestic & foreign made engine — 2 & 4 stroke plus rotary (Wankel). **EDP-169** **7.50**

Small Engines Service Manual — has all info needed to service small engines. All popular makes covered. **EDP-170** **7.95**

How to Repair Small Gasoline Engines. Covers lawn mowers, chain saws, motorcycles, etc. **EDP-188** **5.95**



See page 48 for book-ordering information.

Deluxe low-cost Engine Analyzer

This professional-grade instrument tests conventional, magneto, transistor, and most capacitive discharge ignition systems, regardless of voltage or grounding, on any 3, 4, 6 or 8-cylinder engine. It permits rapid servicing of storage battery, generator or alternator, voltage regulator, starter, distributor, ignition circuit (points, condenser and coil), accessories and all electrical wiring. The large 6″ meter is color coded for easy-reading. Unlike most other analyzers, there is no need to recalibrate between functions. Accuracy is ±3% on all ranges over a wide temperature range. Operates on 3 "C" cells (not supplied). With leads, accessories.

Kit CM-1050, Shpg. wt. 8 lbs. **69.95**

CM-1050 SPECIFICATIONS

Voltmeter Ranges: 0-3.2 V DC. 0-32 V DC, ±3% of full scale. **Ohm-meter:** Two ranges: R x 1 (100 Ω center scale). R x 100 (10 kΩ center scale, ±3° arc. **Tachometer:** Two ranges: 0-1200 rpm, 0-6000 rpm, ±3% of full scale. **Dwell Meter:** Two ranges: 0-45° (on 0-60° scale). 0-60°, ±3% of full scale. **Amperes:** −5 to +90 amperes DC, ±3% of full scale. **Spark Output:** 0-50. **Point Resistance:** Good/Bad. **Alternator:** Good/Bad. **Condenser:** 0.22 μF, 10%. **Accuracy:** ±3% of full scale. **Cables Supplied:** Two 8″ two-conductor test cables. One 2′ alligator to alligator lead. One 2′ alligator to push-on connector lead. One calibration cable. **Accessories Supplied:** 90-ampere shunt. 0.25 Ω resistor assembly. One insulation-piercing alligator clip. Two #10 solder lugs. (#14). **Dimensions:** 7½″ H x 10½″ W x 8¾″ D.



$29.95

Three-In-One Tuneup Meter

Three automotive test instruments in one. Measures dwell on most 4-cycle 3, 4, 6 and 8-cylinder engines having conventional (Kettering) ignitions. Shows RPM on two scales — 0-1500 and 0-4500. Checks voltage from 0 to 15 volts. It can be used with both 6 and 12-volt systems having either positive or negative ground. It has just two leads and uses no batteries.

Kit CM-1073, Shpg. wt. 5 lbs. **29.95**

CM-1073 SPECIFICATIONS

Dwellmeter: Three dwell scales: 8 cyl., 10-45 degrees; 4 cyl., 20-90 degrees; 6 cyl. & 3 cyl. x 2, 25-60 degrees. **Tachometer:** Two RPM ranges; Low range — 0-1500 RPM; High range — 0-2500 RPM. **Voltmeter:** Direct reading scale, 0-20 VDC. **Power Requirement:** 10 mA approximate average current. **Meter:** 4½″, 1 mA (100 degree movement). **Accuracy:** ±3% of full scale. **Dimensions:** 4¼″ H x 8½″ W x 7¼″ D.

Garage Door Openers Are Year 'Round Work-Savers

Deluxe Garage Door Opener



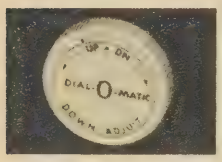
$149.95

- ***Stop Fighting Heavy Garage Doors in Bad Weather***
- ***Extra Safety Too — Stay in your car until you're safely in the garage***
- ***75-Watt light stays on until you're safely in the house — then turns itself off — automatically***
- ***Easy to install — transmitter and receiver are completely pre-wired***

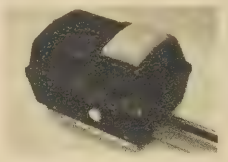
Touch the button on the wireless transmitter in your car — your garage door opens and the light turns on. Touch the button again, the door closes, and the light stays on long enough to see you safely inside your house. Door travel reverses, returns to full open if it is obstructed while closing. Adjustable slip clutch provides opening safety. Self lubricating screw drive & husky ⅓ hp motor assure quiet dependable operation.

Assembly couldn't be easier, most of the work is already done for you. The transmitter and receiver are fully wired, so there's absolutely no soldering! The connecting leads are cut to the proper length with push-on connectors already installed. A doorbell-type button and connecting wire are included for manual use.

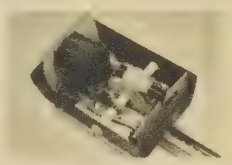
Kit GD-3209A, System with 1 transmitter, Shpg. wt. 49 lbs. **149.95**
Kit GD-3209B, System with 2 transmitters, Shpg. wt. 49 lbs. **164.95**
Kit GDA-3209-1, Mechanism only, Shpg. wt. 47 lbs. **114.95**
Kit GDA-3209-2, Adaptor for jamb & pivot doors, Shpg. wt. 3 lbs. **9.95**
GDP-99, Transmitter, specify frequency, Shpg. wt. 1 lb. **19.95**
GDP-119, 1 transmitter, 1 receiver, Shpg. wt. 2 lbs. **39.95**
GDP-129, 2 transmitters, 1 receiver, Shpg. wt. 2 lbs. **54.95**



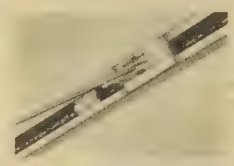
Permanently-installed up/down limiters — no special tools needed.



Rugged plastic case with built-in time-delay safety light.



Powerful ⅓ hp motor easily opens the heaviest residential doors.



Self-lubricating screw drive for reliable, maintenance-free operation.

GD-3209A SPECIFICATIONS

Overall size: 120″ L x 12″ H x 9″ W. **Motor:** 117 VAC ⅓ HP. **Open and Close Time:** Approx. 12 seconds. **Mounting Clearance:** 3″ above highest point of door travel. **Safety Lamp:** Delay circuit keeps lamp on 1 to 3 minutes. **UHF TRANSMITTER:** Powered by standard 9-volt battery. **RF Frequencies:** 290 to 320 MHz. **Useful Temperature Range:** —50°F. to +140°F. **UHF RECEIVER:** Powered by 24 VAC from opener mechanism. Usable on any mechanism having 24 volt AC NEC class II circuit. **RF Frequencies:** 290 to 320 MHz. **Temperature Range:** —55°F. to +140°F.

Build and install this "economy" chain-drive opener over the weekend

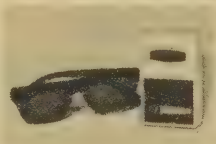


$119.95

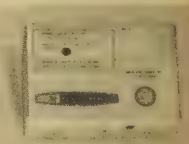
- ***For standard 7½′ track doors***
- ***Optional adaptors available for jamb and pivot doors or "California" style doors***
- ***75-watt safety light stays on until you're indoors***
- ***Factory-assembled transmitter and receiver***

A powerful quarter-horsepower chain-drive opener at a great kit price! The GD-309 operates standard 7½′ track doors or jamb and pivot doors with GDA-309-2 adaptor, or "California" style doors with GDA-309-3 Speed Reducer Adaptor. Self-locking, automatic reversing, Quick-release pin. Factory-assembled receiver has adjustable tone encoding to prevent interference from neighboring units. Includes "doorbell" button & wire for manual door operation.

Kit GD-309A, System with 1 transmitter, Shpg. wt. 51 lbs. **119.95**
Kit GD-309-B, System with 2 transmitters, Shpg. wt. 51 lbs. . . . **134.95**



Portable transmitter comes factory-assembled with a range of up to 150′. (For use with Heathkit systems only.)



Solid-state UHF Receiver comes factory assembled & adjusted.

Kit GDA-309-1, Mechanism only, Shpg. wt. 52 lbs. **89.95**
Kit GDA-309-2, Adaptor for jamb & pivot door, Shpg. wt. 3 lbs. . . **4.95**
Kit GDA-309-3, Adaptor for vertical-opening 1-pc. "California" style doors, Shpg. wt. 4 lbs. **9.95**

(To order additional transmitters & receivers, see listing under GD-3209A above.)

GD-309A SPECIFICATIONS

Overall Sizes: 123″ L x 10″ H x 8½″ W. **Motor:** 120 VAC ¼ HP. **Open and Closing Time:** Approx. 9 sec. for 7′ door. **Control:** Wall-mounted, doorbell-type push-button switch, or optional devices (transmitter-receiver, key switch, etc.). **Safety:** Door travel reverse, returns to fully open position, and stops if obstructed while closing. **Overhead Mounting Clearance:** 2½″ above highest point of door travel. **Safety Lamp:** 60 watts. Automatically turns on when the door is fully open and stays on until door starts to close. **Transmitter and Receiver Specifications:** Same as GD-3209A above.

Assembled transmitters and receivers listed in order numbers above are FCC certified as Heathkit Model Nos. 30 and 38.

Build yourself Heathkit electronic convenience

[1] Ultra-convenient ultrasonic Cleaner

Get the benefits of ultrasonic cleaning for those almost impossible cleaning chores. The Heathkit GD-1150 makes fast work of deep-cleaning watch parts, most jewelry, glass and contact lenses (except plastic), dentures, and even decorator paint brushes. Great for phono cartridge stylus too! Simply fill the stainless steel tank with any safe detergent or solvent for the item to be cleaned. Place the object or objects in the tank, set the timer and that's it! You'll be amazed how quickly and easily your possessions come clean. Professional artists, jewelers and watchmakers have known about and used ultrasonic cleaning equipment for years. Now this low cost kit-form cleaner lets everyone take advantage of this scientific clean-up process. Tank measures 6″ L x 4″ W x 2⅜″ D. Overall, 11″ L x 5¾″ W x 3$\frac{1}{16}$″ H.

Kit GD-1150, Shpg. wt. 5 lbs. **64.95**



[1]

[2] Room-size electronic Air Cleaner

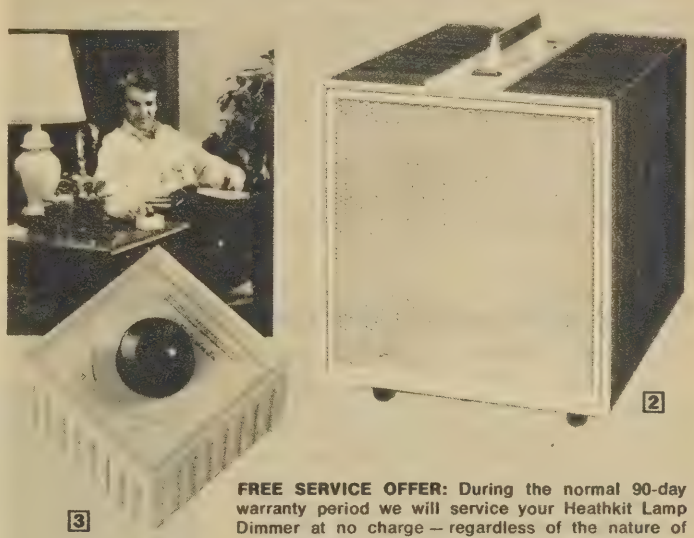
Clean air is important in maintaining the overall good health of your family. And the Heathkit GD-1003 cleans the air of 99% of airborne pollen and 95% of other contaminants...regardless of size or concentration. Plugs into any 120 VAC electrical outlet. A two-speed fan moves large volumes of air — fast — in the "high" position, and provides whisper quiet continuous operation in the "low" position. The big, efficient 5-bladed fan is lifetime lubricated for trouble-free operation. Everything's accessible for easy cleaning, too. A built-in safety interlock switch offers positive shock-hazard protection while cleaning (should you forget to unplug the unit), and against the prying fingers of small children. Cabinet of wood-grained vinyl-coated steel measures 15″ H x 13½″ W x 17¾″ D.

Kit GD-1003, Shpg. wt. 55 lbs. **149.95**

[3] Heathkit Tabletop Lamp Dimmer

A great kit for first-time builders! Set the mood for any activity with just the right amount of light — reading, watching TV. The GD-1018 smoothly adjusts the brightness of table or floor lamps up to 300 watts. Eliminates annoying burned out elements in 3-way bulbs. It'll save energy, too, by giving you just the light you need — it even helps bulbs last longer. Just plug the lamp into the dimmer, then plug the dimmer into any standard household outlet. It's easy to assemble too — goes together in a single evening. For 120 VAC. Makes a great heat-control, too, for pencil-type soldering irons used in circuit board work, installing ICs, etc. Measures 3¼″ H x 3¼″ W x 3¼″ D.

Kit GD-1018, Shpg. wt. 2 bs. **7.95**



[2]

[3]

FREE SERVICE OFFER: During the normal 90-day warranty period we will service your Heathkit Lamp Dimmer at no charge — regardless of the nature of the problem. Simply return the kit to the factory or any Heathkit Electronic Center.

[4] Heathkit "Wireless" 3-Channel AM Intercom

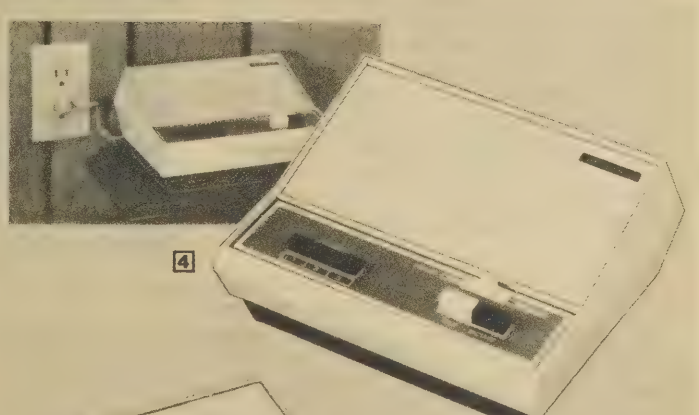
Just build the intercoms you need, plug them into wall outlets—that's all there is to it. They use your home electric wiring for transmissions — and you can move units from room to room at will. Versatile 3-channel operation — ideal for multi-unit setups. Pushbuttons provide channel selection, "Talk" mode, and "Dictate" position. Volume control, internal squelch. Each GD-113 uses about as much current as an electric clock. Attractive light green cabinet 4⅛″ H x 8½″ W x 6¾″ D.

Kit GD-113, Shpg. wt. 4 lbs. **34.95**

[5] Indoor/Outdoor Intercom System

Master functions include "All Call," "Talk," "Dictate"...plus monitoring of up to four Remotes. Indoor Remotes can be rendered private to prevent monitoring. GD-110 and GD-120 are light green and measure respectively 4½″ H x 8½″ W x 6¾″ D and 3¾″ H x 6″ W x 5¾″ D. GD-130 has weatherproof crinkle finish. 5⅜″ H x 3⅝″ W x 2⅝″ D.

Kit GD-110, Master Station, Shpg. wt. 5 lbs. **44.95**
Kit GD-120, Indoor Remote, Shpg. wt. 2 lbs. **12.95**
Kit GD-130, Outdoor Remote, Shpg. wt. 2 lbs. **9.95**
GDA-110-2, 100′ 4-conductor cable, Shpg. wt. 2 lbs. **8.95**
GDA-110-4, 100′ 2-conductor outdoor cable, Shpg. wt. 2 lbs. **4.95**



[4]



[5]
Master

[6] Heathkit 2-Station Intercom System

Master station accommodates up to two remotes. Remotes can initiate "private" calls to Master. Master can call either or both remote stations. Master controls include Sta. 1, Sta. 2, Talk, Dictate, & Volume. Remotes have Talk & Dictate controls. 3″ x 5″ microphone-speakers for crisp, clear sound. Low-profile cabinets with plastic feet for surface use, holes for wall mounting. 3¾″ H x 6″ W x 5¾″ D.

Kit GD-140, one Master, one Remote, Shpg. wt. 4 lbs. **32.95**
Kit GD-120, one extra Remote, Shpg. wt. 2 lbs. **12.95**
GDA-110-2, 100′ 4-conductor cable, Shpg. wt. 2 lbs. **8.95**

[6]

Find out how easy it is to build a kit — order the manual. See page 49.

This Heathkit Wireless Security System gives

Heathkit FM Wireless Security System — priceless peace of mind at a price you can afford

Protect your family and home — even your business — from thieves, fire, vandals — almost any kind of emergency. Our GD-1158 Security System provides the kind of protection and peace of mind you expect from expensive commercial systems — but at a fraction of their cost.

The GD-1158 System is wireless — just plug the modules into any AC outlet, no other connecting wires necessary. All signals are frequency modulated (FM) to prevent false triggering caused by power line noise. And "wireless" design means your system can easily be moved to a new home or expanded to meet your changing needs.

The "heart" of the GD-1158 System is the Central Processor which sounds the alarm whenever it receives a signal from one of the remote modules. This "modular" design provides exactly the protection you need, when you need it — an Ultrasonic Detector protects large areas from intrusion; an Auxiliary Transmitter handles optional heat and smoke detectors as well as contact and pressure switches, and the Emergency Transmitter is a "panic button" so you can sound the alarm. For added convenience and security, only the On/Off Transmitter can disable the Central Processor and turn the system off.

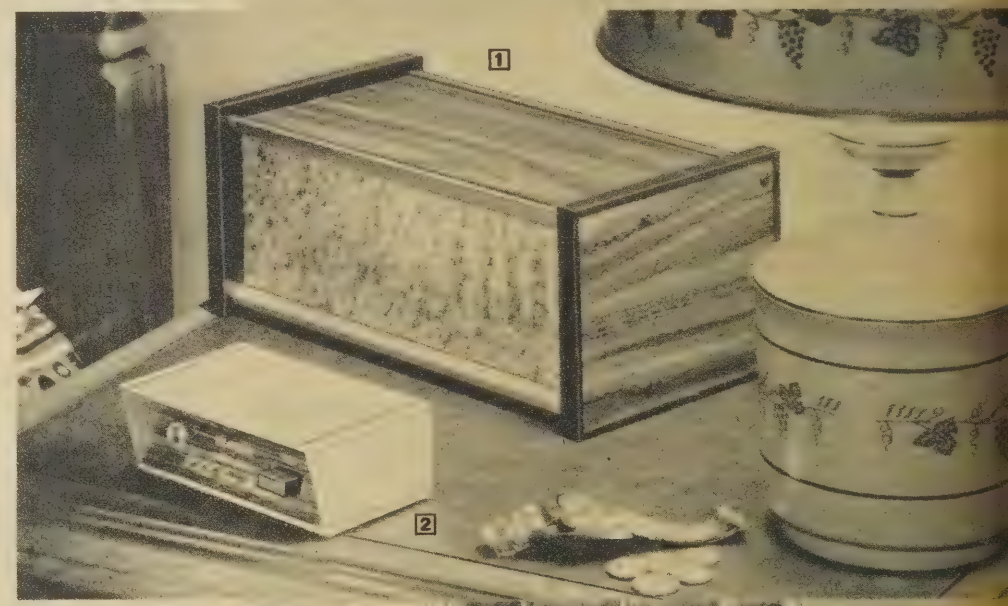
Don't leave your family unprotected. The GD-1158 Security System can prevent an emergency from becoming a tragedy.



1 Central Processor Module

The Central Processor responds to signals from any of the optional modules. To protect against intruders, it sounds the alarm if it receives a signal from an ultrasonic detector or auxiliary transmitter module. As an emergency alarm, it monitors optional heat and fire detectors and can also be triggered by the optional "panic button." And the Central Processor is protected from tampering by a circuit that sounds the alarm if AC power is lost. The Central Processor is designed for your convenience as well as security. A time delay lets you enter or leave the protected area without triggering the alarm. The Central Processor also automatically resets itself within two minutes after the cause of the alarm has been removed. Includes built-in siren and outputs for an external speaker (such as GDA-1158-7) and telephone dialer. Less batteries.

Kit GDA-1158-1, Shpg. wt. 8 lbs. **159.95**



GDA-1158-1 SPECIFICATIONS

Power requirement: 115 VAC, 60 Hz. Carrier frequencies: emergency, 40 kHz. intrusion, 56 kHz. Range: any point on same power distribution transformer secondary. Exit time: 2 minutes. Entry time: 20 seconds. Emergency activation time: 2 seconds. Disable time: 1.5 sec. Outputs: external speaker; relay contacts; telephone dialer. Sound source: switchable internal speaker; or optional external speaker (12 watts into 8 ohms). Sound level at 10 ft.: internal speaker, +88 dB. Dimensions: 4½" H x 10⅞" W x 6" D.

2 Emergency Transmitter Module

No security system is complete without a dependable "panic button." So to provide that extra peace-of-mind and security, we've included this Emergency Transmitter Module in the design of the Heathkit Home Security System. The GDA-1184-4 sounds the alarm instantly, at the touch of a button. In any emergency situation, all you have to do is push the button and the unit transmits a signal to the Central Processor for an alarm. Put one in the bedroom, kitchen, den — anyplace where needed. Then just plug it into the nearest AC outlet. It's one of the extras that we feel makes the big difference between an "adequate" security system and one that gives you the added margin of protection your family deserves. 1¾" H x 5" W x 3¾" D.

Kit GDA-1158-4, Shpg. wt. 2 lbs. **29.95**



Charge a kit — no money down on any kit — see page 50 for details.

your home and family the protection they deserve



3

4

3 On/Off Transmitter Module

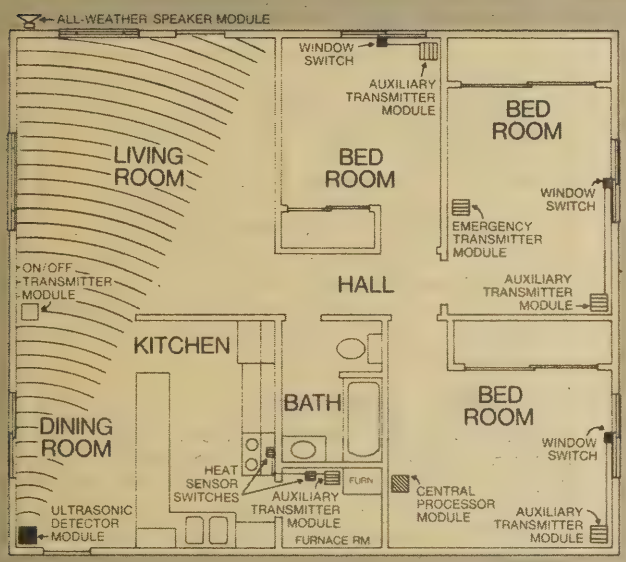
This unique device is one of the reasons why the Heathkit/Delta system is the most convenient security system on the market today. Here's why: The On/Off Transmitter Module is the **only** way in which the intrusion part of your security system can be deactivated. Just plug the unit into an AC outlet in any convenient location, then push the button in to disable the intrusion circuits of the Central Processor. To turn the Central Processor back on again, just release the button, or unplug the transmitter. 1¾" H x 5" W x 3¾" D.

Kit GDA-1158-3, Shpg. wt. 2 lbs. **29.95**

4 Auxiliary Transmitter Module

This convenient module allows you to add other protection devices to your Heathkit/Delta security system without extensive wiring. Door and window switches, mat pressure switches and any other switches may be wired into the unit. Switches must be either all normally open (N.O.) or all normally closed (N.C.) types. The transmitter then relays signals from the connected devices to the Central Processor via the AC line. Transmitter plugs into any convenient AC outlet. 3¼" H x 7¼" W x 3¼" D.

Kit GDA-1158-6, Shpg. wt. 3 lbs. **39.95**



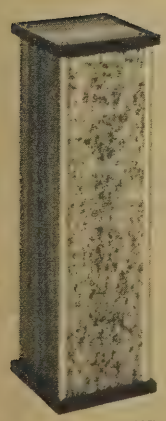
Typical installation for complete home security

Our Heathkit Security System is designed for maximum versatility in your home. You can locate modules wherever you need them... even move them from room to room, to create a total home protection system. Use it to protect your business, too.

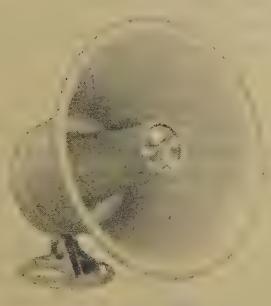
The unique modular design of the Heathkit Security System means you can start with a modest investment, then add components to fit your requirements...and your budget.

Easy, step-by-step instructions guide you through the complete assembly of your new security system. And installation couldn't be easier. All components plug into regular wall sockets and use your home or building's AC power line to transmit signals to the Central Processor.

Act today. Get this dependable security system into your home or business...for the protection you want and need.



5



6

5 Ultrasonic Detector Module

You can place any number of these ultrasonic detectors within your customized security system. Each unit plugs directly into an AC outlet and monitors an area of up to 300 sq. ft. The range of each unit is up to 20 feet. The detectors use harmless, inaudible high frequency sound waves to detect movement within the protected area. If an intruder enters the area, the detector will transmit a signal to the Central Processor which sounds the alarm. 10⅝" H x 3¼" W x 3¼" D.

Kit GDA-1158-2, Shpg. wt. 4 lbs. **74.95**

6 Outdoor Speaker

The GDA-1158-7 Speaker provides more than enough volume to be heard throughout your neighborhood...loud enough to frighten any would-be intruders and summon help. The speaker's all-weather design lets you mount it indoors or out. All necessary mounting hardware is included. The GDA-1158-7 attaches to the Central Processor for external sound.

GDA-1158-7, Shpg. wt. 3 lbs. **19.95**

Heath Security—protection that works full-time



Uses the same ultrasonic detection system widely used in banks and commercial establishments.

$59.95

"The Informer®" Ultrasonic Alarm

The Heathkit GD-39 Ultrasonic Intrusion Alarm sits quietly on bookshelf or table until something or someone invades its field of surveillance. Then "The Informer" can activate indoor buzzer alarms, outdoor bells, table or floor lamps...to alert you to the possible presence of an intruder as far as 25 ft. from the unit. Any movement that interrupts that transmitted signal in the room is perceived by the receiver, and the lamp outlet is triggered, turning on table or floor lamps. Approximately 30 seconds later, the alarm outlet is triggered, activating indoor or outdoor alarms. Built-in time delay between light and alarm allows you to enter room and deactivate the "Informer" without triggering the audible alarm. You can set the lamp and alarm for automatic reset after 25 seconds or have audible alarm continue to sound until the unit is manually reset.

NOTE: As the GD-39 Ultrasonic Alarm operates in the same frequency range as Ultrasonic TV Remote Controls, interference between the two is possible.

Kit GD-39, Shpg. wt. 5 lbs. **59.95**
GDA-39-1, indoor buzzer alarm, Shpg. wt. 3 lbs. **9.95**
GDA-39-2, outdoor bell, Shpg. wt. 6 lbs. **26.95**

GD-39 SPECIFICATIONS

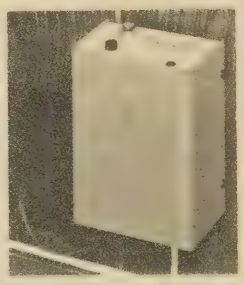
Operating range: Varies with installation. Typical maximum range is 25 ft. Operating times: Turn-on delay: approximately 10 sec. Alarm delay: 20 to 30 sec. (lamp-on time). Automatic reset delay: 20 to 30 sec. (alarm-on time). Power outlets: Two AC sockets: One for Lamp, one for Alarm. Power outlet current: Three amperes total for both. Power requirement: 120/240 VAC, 60/50 Hz, 1½ watts. Dimensions: Chassis only, 2" W x 9¼" H x 7½" D (approximately). In book-style cover, 2⅜" W x 10⅛" H x 7½" D (approximately).



1



2



3

Alarm devices 1, 2 and 3 are designed for use together to provide a very effective wireless protection system for your entire house. Simply plug each unit into existing AC outlet, NO OTHER WIRING needed for signals!

1 Early-Warning Receiver Alarm

For use with the Heathkit Fire Detector/Transmitter and Utility Transmitter to alert your family to intrusion, fire, freezing, power failure, etc. Emits piercing tone to raise the soundest sleeper. Has continuously charged nickel-cadmium battery to trigger Receiver Alarm in case of power failure. Just plug into 110 VAC, no other wiring needed to receive signals.

Kit GD-77, Shpg. wt. 4 lbs. **56.95**

2 Fire detector/transmitter

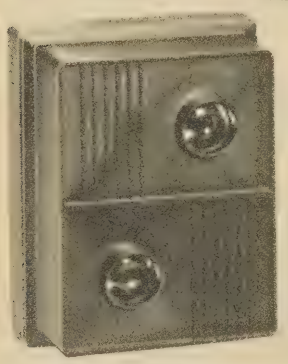
The Heathkit fire detector/transmitter triggers the Receiver Alarm upon detecting very low density smoke or 133°F. heat. Photocell smoke detector. Adjustable sensitivity. Remote heat sensors can be added. Uses AC line to transmit signal to GD-77 receiver.

Kit GD-87A, Shpg. wt. 4 lbs. **56.95**

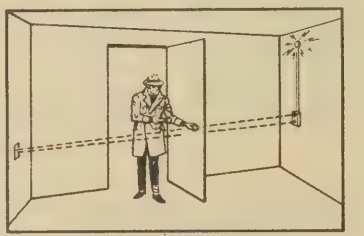
3 Utility transmitter

The Heathkit Utility transmitter accepts any switch or sensor that produces a closed circuit, such as Heathkit GDA-97-1 miniature magnetic-reed switch or GDA-97-2 miniature micro switch for doors and windows, or new, improved easily-mounted heat sensor switch GDA-97-4 (135°F). Uses AC line to transmit signal to GD-77 receiver.

Kit GD-97, Shpg. wt. 3 lbs. **42.95**
GDA-97-1, Mini reed switch, Shpg. wt. 1 lb. **2.75**
GDA-97-2, Micro switch, Shpg. wt. 1 lb. **3.00**
GDA-97-4, Heat sensor, Shpg. wt. 1 lb. **3.50**



4



Sounds alarm when light beam is broken!

4 Heathkit Eye Spy™ photobeam relay

The kit consists of a light source, a mirror assembly, and a photo-cell controlled relay which is activated whenever the reflected light beam is broken, thereby energizing the AC socket on the light source unit. Any warning devices or lamps plugged into this socket are then activated. When light beam is no longer obstructed, the photo relay shuts off power to the alarm. Unit operates at distances of up to 25 ft. from reflecting mirror. Electronic package measures 5⅜" H x 4⅜" W x 5¼" D. Mirror assembly measures 5" H x 4" W x 2¾" D.

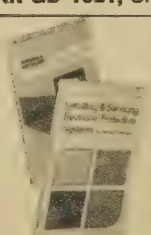
Kit GD-1021, Shpg. wt. 2 lbs. **14.95**



Photoelectric Lamp Switch

Turns lights on in the evening, off in the morning — automatically. Helps discourage burglars while you're away from home. Just plug it in to any wall outlet, adjust the sensitivity and the GD-600 does the rest. For incandescent lamps up to 150 watts. A great 1-evening get-acquainted kit.

Kit GD-600, Shpg. wt. 1 lb. **5.95**



Start your own profitable security system career — these books show you how:

Building & Installing Electronic Intrusion Alarms — covers construction, installation & maintenance of all types of alarms & sensors for home & auto. **EDP-135....4.50**

Installing & Servicing Electronic Protective Systems. Covers virtually every electronic fire & theft security system. **EDP-136** **5.95**

See page 48 for book ordering information.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Count on savings with Heathkit Calculators

[1] 8-digit desktop slide-rule calculator

$79.95 ***Performs all these functions:***

sine	powers of e	pi
arc sine	common logarithms	addition
tangent	natural logarithms	subtraction
arc tangent	exponential powers	multiplication
cosine	square roots	division
arc cosine	inverses	

The IC-2100 fits where most people use a slide-rule calculator—on a desk. Easy to use with sloped keyboard and contoured, well-spaced keys. Beckman planar gas discharge digits are specially angled to reduce glare and provide maximum visibility. 12 white keys perform two functions. Normally they enter numbers, but, press the Function key and they trigger the transcendental functions. Forget to press the Function key? — DR key removes inadvertent entered digit without erasing entire entry. Four memory keys allow you to enter or add to a number already in the memory, recall the memory to the working display, interchange the memory and working displays or clear the memory. Single entries can be carried through a long series of calculations as a constant. Operates on 120 or 240 VAC.

Kit IC-2100, Shpg. wt. 4 lbs. . . . . **Originally 119.95, NOW ONLY 79.95**

[2] Four-function Heathkit desktop calculator

$29.95 Easy-to-read, ½"-high Beckman planar gas-discharge tubes in an 8-digit display. Sloped keyboard to let you rest your entire arm while operating the calculator. Constant key (K) simplifies repetitive problem solving. Separate equal key (=) permits entering computations as you would write them out, totaling up as you go, or working in a chain manner. Display has individual lighted indicators for entry and result overflow. A negative number sign provides credit-balance capability. Reciprocals (1/x) are quickly found using the constant, divide and equal keys. Floating decimal. IC-2108 lights up instantly. The kit is easy to build, single LSI related and only 3 circuit boards. Can be wired for 120/240 VAC. Measures 2¼" H x 7" W x 9⅝" D.

Kit IC-2108, Shpgw wt. 4 lbs. . . . . **was 64.95, NOW ONLY 29.95**

[3] Calculator "package" goes with you

$49.95 Lowest price ever on this calculator "package"; IC-2009 calculator originally 92.50; carrying case originally 3.95; desk set originally 12.95 — original total value of 109.40 now "package-priced" at only 49.95 complete. Operates on internal rechargeable ni-cad battery; or plugs into charger; or use it with desk set's built-in charger. Calculator adds, subtracts, multiplies, divides. Floating decimal; chain operation; credit balance with plus & minus results; constant key (K). Battery saver circuit turns off display after 15 seconds...recall display by depressing recall key (D) or by entering new information. Calculator measures 5½" H x 3¾" W x 1¾" D. Executive Desk Set measures 2⅛" H x 8½" W x 8¾" D. Naugahyde® carrying case with felt lining and zipper closure. Battery is supplied.

ICL-2009, includes calculator kit & charger, Executive Desk Set with charger, and carrying case, Shpg. wt. 7 lbs. . . . . **NOW ONLY 49.95**

[4] Our four-function pocket calculator...

$29.95 Our "thinnest" calculator and it's our lowest priced. Use it with a built-in 9-volt battery (optional) or the optional AC adapter. A sophisticated integrated circuit adds, subtracts, multiplies and divides with computer-like speed and accuracy. A constant (K) speeds repetitive calculations in multiplication and division. Top features include a 17-key keyboard and an 8-digit easy-to-read ⅛" high LED display with no distorting "magnifier." Complete manual explains operation and gives valuable reference tables for many applications. Fits in pocket, purse or briefcase. Designed for easy assembly, even for first-time kit builders. Measures 5" L x 2 13/16" W x 15/16" D, and weighs 7 oz. (less battery).

Kit IC-2006, Shpg. wt. 2 lbs. . . . . **was 39.95, NOW ONLY 29.95**

GRA-43-1, AC converter, Shpg. wt. 1 lb. **4.95**





Electronic Calculators — memories, displays, design, fabrication, selection, interfacing with hard-copy equipment, servicing. **EDP-179,** **5.95**

99 Ways to Know & Use Your Calculator — compute complex functions and solve complicated problems with a 4-function calculator. **EDP-208,** **5.95**

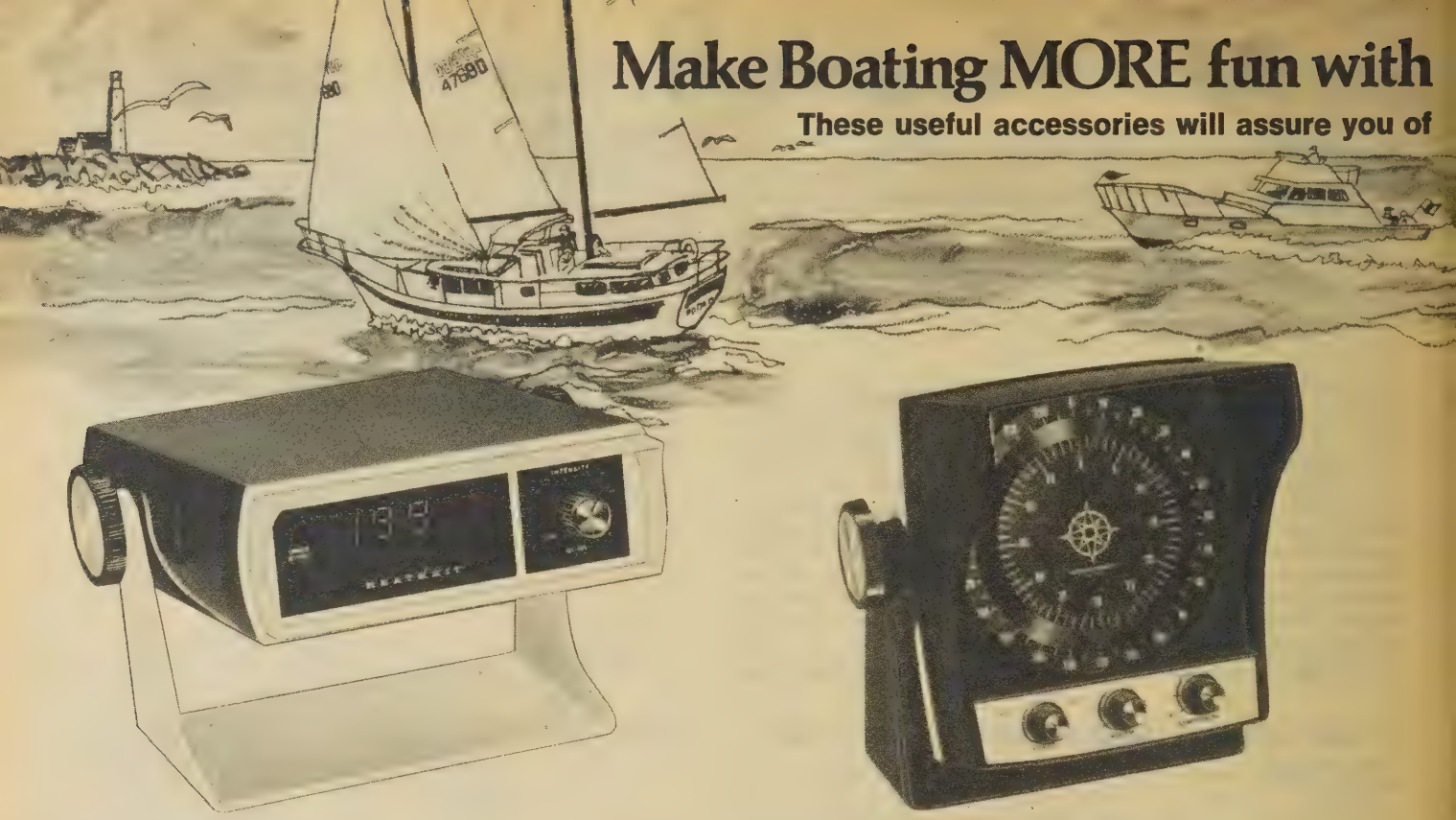
Getting the Most Out of Your Electronic Calculator — a calculator math course with dozens of practical examples. **EDP-132,** **4.95**

See page 48 for book ordering information.

Find out how easy it is to build a kit — order the manual. See page 49.

Make Boating MORE fun with

These useful accessories will assure you of



Digital depth sounder

$149.95

- ***Prevents running aground — lets you know depth of water below you from 2-199 ft.***

Accurate depth readings at a glance. Dual-range digital display automatically reads depth in 0.1 foot increments from 2.5 to 19.9 feet and in 1 foot increments from 20 to 199 feet. A red light signals clearance of 10 feet or less. A single knob controls power on/off and brightness of the readout digits. Regulated power supply maintains accuracy over wide range of DC voltages. Cycolac® case; gimbal mounting bracket; 15 feet cable for through-hull installation, 25 feet for transom mount.

Kit MI-101-1, With through-hull transducer,
Shpg. wt. 7 lbs. **149.95**

Kit MI-101-2, With high speed transom transducer,
Shpg. wt. 6 lbs. **149.95**

MI-101-1 & -2 SPECIFICATIONS

Sounding frequency: 200 kHz. **Sounding rate:** Maximum of 11/sec. on both ranges for a total of 22/sec. Normal rate of approx. 1/sec. **Accuracy:** ±2%, ±1 digit. **Current drain:** 300-500 mA. **Power requirements:** 10-17 VDC @ 500 mA. **Transducer:** Barium titanate ceramic element encased in splashproof housing. **Dimensions:** 2¼″ H x 6⅝″ W x 8½″ D (less gimbal hardware).

Deluxe dual-range depth sounder

$99.95

- ***Switch selected 0-60 ft. and 0-240 ft. readings for extra accuracy and precision.***

Shows depth, type of bottom, even schools and individual fish, submerged objects. A high-pitched "beep" alerts you to shoals or objects projecting above any preselected depth from 5 to 240 ft.

Electronically controlled silent-running motor; fixed noise rejection circuit to eliminate ignition interference; diode protection against accidental polarity reversal. Water-resistant Cycolac® cabinet has a glare-free bezel and integral sun shield. Super-bright neon indicator light stands out even in bright sunlight. The gimbal mount and quick-disconnect power and transducer leads allow for easy removal when your boat is not in use. Kit goes together easily in about four evenings.

Kit MI-1031-1, sounder with thru-hull transducer & 15′ cord,
Shpg. wt. 8 lbs. **99.95**

Kit MI-1031-2, sounder with transom transducer & 25′ cord,
Shpg. wt. 7 lbs. **99.95**

MI-1031 SPECIFICATIONS

Frequency: approx. 200 kHz. **Accuracy:** Within 2% of actual depth. **Transducer:** Barium titanate ceramic element encased in splashproof housing. **Power requirements:** 0-60′ range, 225 mA @ 11-15 VDC; 0-240′ range, 125 mA 11-15 VDC with one return pulse. **Dimensions:** 6½″ H x 5¾″ W x 7¼″ D.

Make your presence known with this 4-function Foghorn/Hailer



$99.95

- ***Combines a foghorn, hailer, boathorn and intercom in a single, inexpensive package.***

The Heathkit MD-19A features a husky 55-watt amplifier; foghorn rate and duration controls; separate "listen" & "hail" gain controls; optional remote speaker for ship's intercom use. Kit is easy to assemble, and includes low-profile weather-resistant deck horn, 20 ft. speaker cable, gimbal mount. Styled in marine white with blue trim. Operates on your ship's 12 VDC power system, positive or negative ground.

Kit MD-19A, with horn speaker,
Shpg. wt. 15 lbs. **99.95**

Kit MDA-19-1, remote speaker,
Shpg. wt. 2 lbs. **11.95**

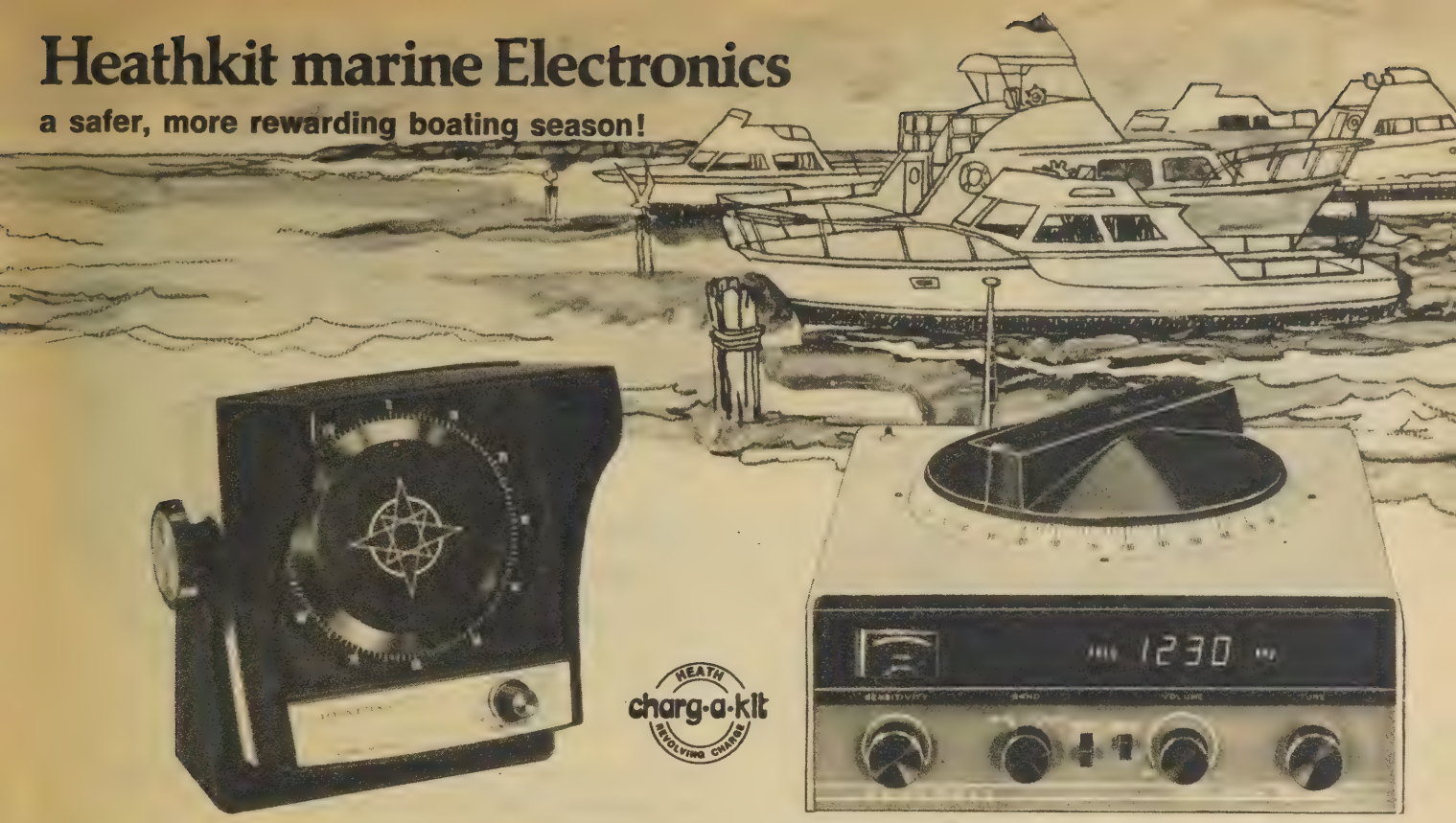
MD-19A SPECIFICATIONS

Boathorn frequency: Approx. 530 Hz. **Foghorn frequency:** Approx. 390 Hz. **Foghorn rate:** Approx. 2-90 sec., variable. **Foghorn duration:** Approx. 2-20 sec., variable. **Microphone:** Ceramic with push-to-talk switch. **Power requirements:** 12 VDC nominal, 4.5 A max. **Dimensions:** 4¾″ H x 9¾″ W x 9¼″ D. **Color:** White wrinkle and dark blue.

Want faster service? Order by phone — call (616) 982-3411 day or night.

Heathkit marine Electronics

a safer, more rewarding boating season!



Economy depth sounder

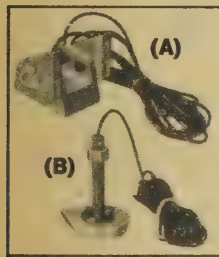
$69.95

- ***Has the same advanced circuit as the MI-1031, but with single range (to 240 ft.), no alarm.***

Same features as MI-1031, but single range and no alarm.

Kit MI-1030-1, sounder with thru-hull transducer & 15′ cord, Shpg. wt. 8 lbs. **69.95**

Kit MI-1030-2, sounder with transom transducer & 25′ cord, Shpg. wt. 7 lbs. **69.95**



These depth sounders are available with either through-the-hull or transom-mount transducers. The transom mount unit (A) is recommended for high-speed craft with planing hulls. The through-the-hull transducer (B) is ideal for permanent mounting on larger boats with displacement hulls.

MR-1010 Digital Radio/Direction Finder

SAVE $40
Was $239.95

$199.95

- ***Digital readout pinpoints AM or beacon stations — no more waiting for station identification.***

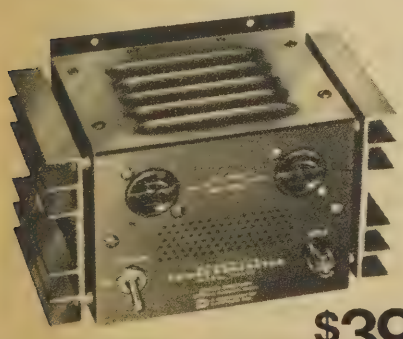
Find your way with the versatile Heathkit MR-1010! It keeps you informed on the 190-410 kHz LW band and standard AM. It identifies stations with a digital frequency readout, and gives you a heading from its big easy-read azimuth ring marked in 2° increments! Has excellent sensitivity, lighted meter for accurate null indications, telescoping sense antenna for an impressive bearing accuracy of ±3°. Operates from your boat's 12 VDC system, or its own built-in power source (6 "D" cells, not included). Battery-saver display cuts off after 20 seconds, can be recalled instantly.

Kit MR-1010, Shpg. wt. 14 lbs. **199.95**

MR-1010 SPECIFICATIONS

Bands: 190-410 kHz (LW); 535-1605 kHz (AM). **Sensitivity:** Typically 30 μV/m (LW) for 10 dB S+N/N. **IF Frequency:** 453 kHz. **Selectivity (6 dB points):** 3 kHz (LW); 5 kHz (AM). **Readout Accuracy:** ±2 kHz. **Audio Output:** 1 watt. **Speaker:** built-in 3x5″. **Current Drain:** 450 mA (with display & meter); 110 mA (meter only); 30 mA (radio at typical listening level). **Dimensions:** 7¼″ H x 11½″ W x 12″ D.

Heathkit Fuel Vapor Detector sniffs out deadly gas fumes in your bilge



$39.95

Economy power inverter

Operates many small appliances from 12-volt input. Supplies 117 VAC square wave, up to 175 watts continuous. Not for equipment with high starting current or sine wave AC. 25-amp fuse.

Kit MP-10, Shpg. wt. 8 lbs. **39.95**



$69.95



An important safety accessory for EVERY powered craft!

Gives a meter indication of safe-dangerous — explosive conditions in your bilge, sounds an audible alarm when gasoline fumes are present. Solid-state circuit has fail-safe provision that triggers alarm should any component fail. Built-in relay circuits control bilge blower or additional warning devices.

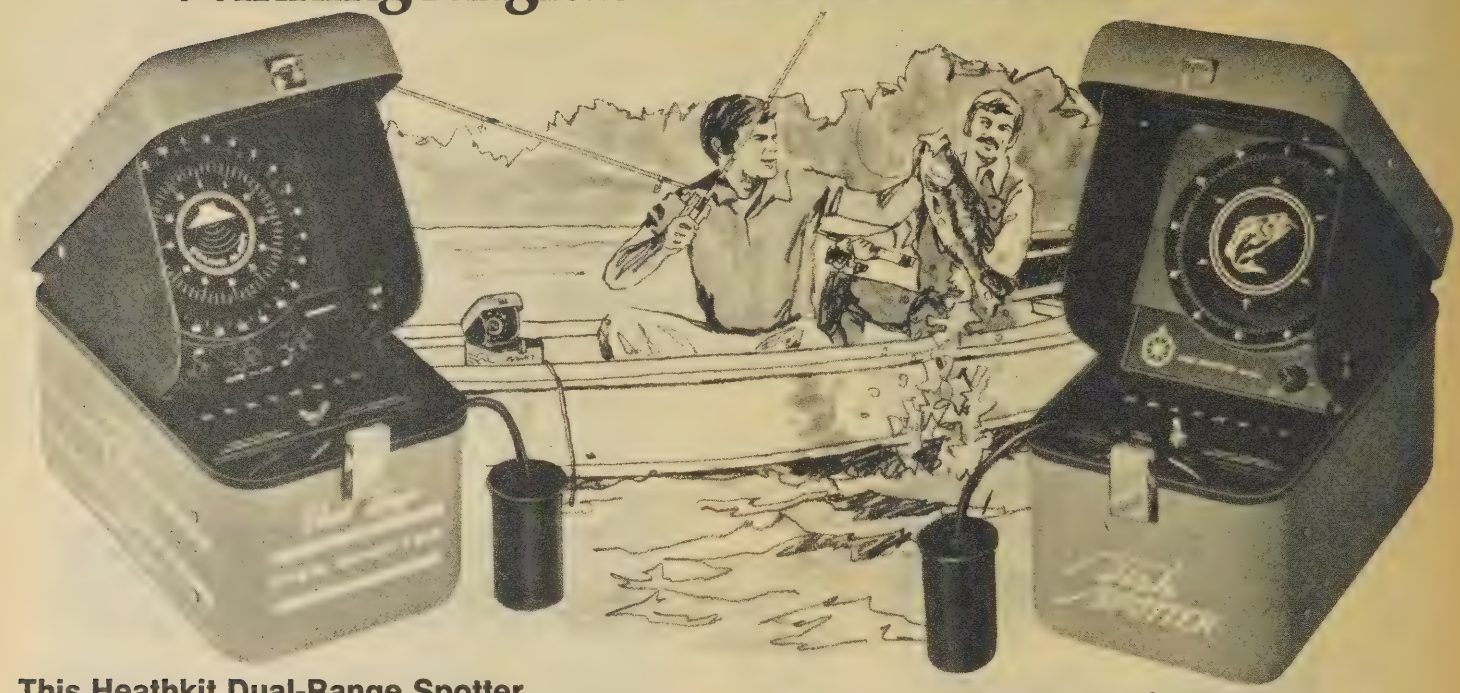
Kit MI-25, Shpg. wt. 3 lbs. **69.95**

MI-25 SPECIFICATIONS

Voltage: 12 VDC, ±10%. **Current:** 1.0 A nominal. **Panel size:** 2 1/16″ H x 5 1/16″ W. **Depth:** 5″. **Detector head size:** 1½″ round x 2½″ long. **Length of interconnecting cable supplied:** 15′. **Color:** Marine white & black. **Material:** Aluminum. **Temp. range:** −30°C. **Audio alarm:** 2500 Hz.

Charge a kit — no money down on any kit — see page 50 for details.

Winning Anglers Demand Heathkit Gear



This Heathkit Dual-Range Spotter sounds off when they're below

$99.95 • ***All solid-state circuitry for improved sensitivity, dependability and minimum battery drain***

The Heathkit MI-2901 Fish Spotter® Sounder has adjustable audible alarm you set to sound off at any depth to 240 ft. Fish swimming between surface and preset depth will trigger alarm. *Includes two switch-selected ranges* (0-60′ and 0-240′) for sharper definition; bright neon-flasher for precise depth reading; noise rejection circuitry to eliminate engine ignition interference. Rugged aluminum cabinet. Portable suction-cup transducer bracket. Powered by two 6-volt lantern batteries (not supplied).

Kit MI-2901, Shpg. wt. 9 lbs. **99.95**

Kit MIA-2900-1, Scanning Transducer Bracket, Shpg. wt. 4 lbs. **19.95**

MI-2901 SPECIFICATIONS

Accuracy: ±2% with motor speed of 2400 rpm in the 0-60′ range and with motor speed of 600 rpm in the 0-240′ range. **Sounding: Rate:** 40 times per second on the 0-60′ range. 10 times per second on the 0-240′ range. **Frequency:** 200 kHz, ±5%. **Noise Rejection:** Fixed at approximately 500 microseconds integration time. **Receiver Sensitivity:** 75 μV nominal at 200 kHz. **Depth Indication:** Neon lamp flashes at zero and again at the indicated depth from the object. **Alarm:** 5-59′ on the 0-60′ range. 5-239′ on the 0-240′ range. **Transducer:** Barium titanate ceramic element encased in a splashproof housing. **Transducer Cable Length:** 15′. **Power Requirements:** 12 VDC. **Dimensions: (Less Handle):** 7″ H x 6″ W x 11″ D.

The Economy Fish Spotter® Sounder gives you professional tackle for less

$69.95 • ***Simplified circuit design makes assembly easy***

The Heathkit MI-2900 Fish Spotter® Sounder should be standard tackle for any serious angler. It finds individual and schools of fish to depths of 240 ft.; and it will stand duty as a reliable depth sounder on any cruise. Solid-state circuitry assures you of accuracy, dependability and minimal battery drain. Noise-rejection circuitry eliminates ignition interference. Improved disk and slip-ring assembly for quieter operation. Has on-off sensitivity control. Bright neon indicator lamp that won't wash out, even in direct sunlight. Portable suction-cup transducer mount, or order scanning transducer mount, below. Powered by 2 6-volt lantern batteries (not supplied).

Kit MI-2900, Shpg. wt. 9 lbs. **69.95**

Kit MIA-2900-1, Scanning Transducer Bracket, Shpg. wt. 4 lbs. **19.95**

MI-2900 SPECIFICATIONS

Accuracy: ±2% @ 240 rpm. **Sounding: Rate:** 20 times per second. **Frequency:** 200 kHz ±5%. **Noise Rejection:** Fixed at approximately 500 microseconds integration time. **Receiver Sensitivity:** 75 μV nominal at 200 kHz. **Transducer:** Barium titanate ceramic element encased in a splashproof housing. **Transducer Cable Length:** 15′. **Power Requirements:** 12 VDC, 2 6V lantern batteries. **Dimensions:** 7″ H x 6″ W x 11″ D.



Scanning Transducer Bracket for MI-2901 & MI-2900

The Thermo Spotter® thermometer finds the depth where your fish feed

Completely self-contained with submersible sensing element on a 100-ft. cable. Battery-powered meter circuitry in high-impact plastic take-up reel case. Simply lower the line, press spring-loaded meter button for temp. readout, check depth on cable. Kit includes operations manual with fish temp. preference charts. Uses 1.5-volt penlight battery (not supplied).

Kit MI-104, Shpg. wt. 3 lbs. **27.95**

MI-104 SPECIFICATIONS

ELECTRICAL: Circuit: Bridge type with thermistor sensor in one arm. **Indicator:** 50μA meter. **Temperature scale:** 32°-86°F. (0°-30°C). **Accuracy:** within ±3°F. **Current drain:** Less than 3 mA when in use. **Battery:** Size AA penlight cell NEDA 15. **PHYSICAL: Case:** Molded high-impact plastic. **Cable length:** 100 ft. **Reeling speed:** 1 ft. per turn (approx.). **Dimensions:** 10¼″ x 5¾″ x 3¼″.

Heathkit Scanning Transducer Bracket

Designed for use with Heathkit MI-2901 and MI-2900 Fish Spotter® sounders. "C" clamp mounting. Scans 360°, locks in any position. Accepts any 1⅜″ cylindrical transducers.

Kit MIA-2900-1, Shpg. wt. 4 lbs. **19.95**



Handy Boating Books

Marine Electronics Handbook — covers radios, codes, antennas, direction finders; clearly written. **EDP-134** **4.95**

Easi-Guide to Boat Radio — how to select, install & maintain a boat radio; FCC rules governing marine radio; a real asset to boating safety. **EDP-133** **3.50**

See page 48 for book-ordering information

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit R/C gets you up and away from the crowd!

Join a select fraternity of individuals who've found enjoyment and relaxation in an exciting pastime...R/C modeling. Know the thrill of putting your R/C plane through a skilled aerobatic maneuver...drifting through a tight turn with your R/C car...skimming around a point marker with your own R/C hydroplane.

Complete systems as low as
$154.95



Budget-priced 3-ch/4-ch R/C systems

Here's R/C versatility at its best. The basic 3-channel system converts to 4 channels whenever you're ready. The 3-channel transmitter comes with a 2-axis stick assembly. The conversion pack (below) lets you go four channels by putting 3 channels on the stick with the fourth channel controlled by a convenient thumb tab.

Top-flight features include all nickel-cadmium battery packs with external charging unit, vinyl-covered front panel, telescoping whip antenna, and relative power output meter that doubles as a battery charging indicator. The compact 3-channel Receiver has molded nylon case and connector block for servos and receiver battery pack. It's compatible with all Heathkit servos, and the conversion kit converts it to 4-channel also.

SPECIFY FREQUENCY WHEN ORDERING

Kit GDA-1057-1, 3-channel transmitter, Shpg. wt. 4 lbs. **84.95**
Kit GDA-1057-4, 4-channel conversion pack for both transmitter and receiver, Shpg. wt. 1 lb. **21.95**
Kit GDA-1057-2, 3-channel receiver, Shpg. wt. 1 lb. **36.95**
Kit GDA-1205-3, Receiver battery pack, Shpg. wt. 2 lbs. **9.95**
Kit GDA-19-4, standard servo, Shpg. wt. 1 lb. **21.95**
Kit GDA-405-44, miniature servo, Shpg. wt. 1 lb. **29.95**
Kit GDA-505-44, sub-miniature servo, Shpg. wt. 1 lb. **29.95**

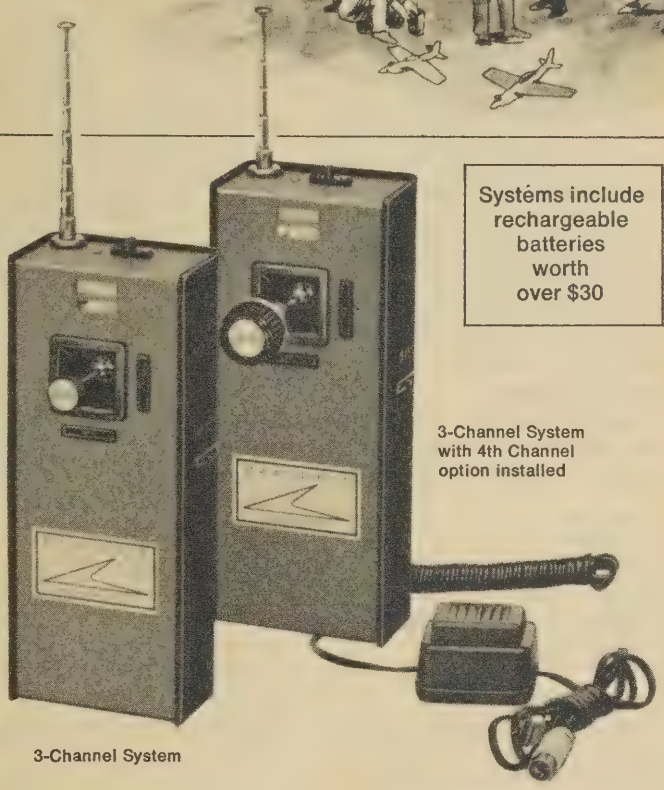
GDA-1057-1 SPECIFICATIONS

TRANSMITTER—**RF Carrier Frequency:** One frequency, crystal-controlled on 27 MHz, 53 MHz or 72 MHz bands. **Operating Temperature:** 0°-160°F. **Controls:** 3 channels (two with trim); ON-OFF switch. Optional fourth channel. **Power Supply:** Internal 9.6V, 500 mA hours, nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 50 mA from external charger. **Frequencies Available:** 27 MHz (11 meters) — 26.995, 27.045, 27.095, 27.145 & 27.195. 53 MHz (6 meters) — 53.100, 53.200, 53.300, 53.400, 53.500. 72 MHz (4 meters)for R/C planes only — 72.080, 72.240, 72.400, 75.640. (All Models) — 72.160, 72.320, 72.960. **Dimensions:** 9½" H x 3¹¹⁄₁₆" W x 2¼" D.

GDA-1057-2 SPECIFICATIONS

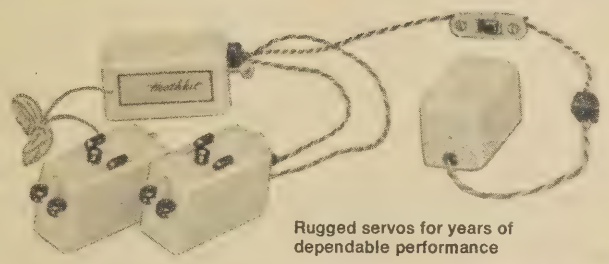
RECEIVER—**RF Carrier Frequency:** One frequency, crystal-controlled on 27 MHz, 53 MHz, 72 MHz. **Operating Temperature:** 0°-160°F. **Power Supply:** 4.8V; Battery Pack GDA-405-3. **Dimensions:** 1⁵⁄₃₂" H x 1¾" W x 2¹⁷⁄₆₄" D. **Net Receiver Weight:** 2.5 oz. **Servo Channels:** 3 (4 with option). **GENERAL**—Complete airborne system weight: with GDA-505-44 servos: 8.8 ozs.

Systems include rechargeable batteries worth over $30



3-Channel System with 4th Channel option installed

3-Channel System



Rugged servos for years of dependable performance

Save on a complete R/C system

3-Chnl. Trans., Rec., Rec. Batt. Pk., 2 GDA-19-4 Servos, Shpg. wt. 9 lbs. **154.95**
SAVE 20.80.....If purchased separately 175.75

3-Chnl. Trans., Rec., Rec. Batt. Pk., 2 GDA-405-44 Servos, Shpg. wt. 9 lbs. **164.95**
SAVE 26.80.....If purchased separately 191.75

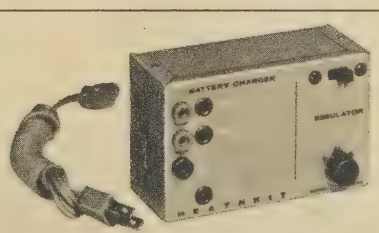
3-Chnl. Trans., Rec., Rec. Batt. Pk., 2 GDA-505-44 Servos, Shpg. wt. 9 lbs. **164.95**
SAVE 26.80.....If purchased separately 191.75



Heathkit Thumb® Tach peaks engine performance

Measures model engine rpm without physical connection to engine. Two ranges — 0-5000 and 0-25,000. Perfect solution to needle valve adjustment, selection of glow plugs, gears and props.

Kit GD-69, Shpg. wt. 2 lbs. ...**24.95**



Heathkit Servo Simulator for easy servo adjustment

Takes the place of both transmitter and receiver for making adjustments on all Heathkit servos, and a wide variety of others. Operates servos from 120 VAC line or from the optional internal battery pack. Charges receiver and glo-plug batteries when plugged into 120 VAC. Bulb shows battery condition. Kit includes adaptor cable for Heathkit GD-405 series servos.

Kit GD-1053, Shpg. wt. 3 lbs. **24.95**
Kit GDA-19-3, optional battery pack, Shpg. wt. 1 lb. **4.95**

Servo Centering Standard



Calibrates all Heath servos with variable pots to the 1.4 millisecond pulse width standard. Eliminates recentering when you switch from one transmitter or receiver to another.

Kit GD-1189, Shpg. wt. 1 lb. **9.95**

RC Maintenance Manual



Comprehensive, detailed information on the use and maintenance of Heathkit R/C gear. Shows you how to get the most from your R/C gear. Helpful hints for owners of non-Heath R/C gear too. **GDA-1205-7. .1.00**

See page 48 for book ordering information

Heathkit Pack-17™ R/C Systems

Radio Control is a growing, fun-filled hobby for youngsters of all ages — and the Heathkit Pack-17 System is the one you need for precision control of model aircraft, boats or cars.



- ***17 plug-in frequency modules let you change frequencies instantly...no more delays***
- ***Slim-line transmitter case is easy to hold***
- ***Compatible 5 or 8-channel transmitters with single or dual-stick control...for smaller models to the big ones***
- ***Compact receiver slips easily into tightly-spaced fuselages...complete airborne system weighs just 13¼ oz.***

The Heathkit Pack-17 R/C System is the perfect start to a richly rewarding hobby. Transmit, receive and servo units come to you in easy-to-assemble kit form...so you know your equipment when it's time to start operating. Heathkit R/C Systems have the rugged reliability serious R/Cer's want...tough glass epoxy circuit boards; reinforced transmitter cases with scuff-resistant brown vinyl covering; servos with heavy-duty gears and built-to-take-it cases.

5-Channel Dual-Stick Transmitter & 1 module. 2-stick control of 4 channels, plus 1 aux. channel.
Kit GDA-505-D, Shpg. wt. 7 lbs. **129.95**

5-Channel Single-Stick Transmitter & 1 module. 1-hand control of 3 channels (2 through gimbal couplings & 1 with return-to-center-knob), throttle control with trim & 1 aux. channel.
Kit GDA-505-S, Shpg. wt. 7 lbs. **139.95**

8-Channel Dual-Stick Transmitter & 1 module. Same as GDA-505-D, plus landing gear switch & 2 additional channels.
Kit GDA-1205-D, Shpg. wt. 6 lbs. **139.95**

8-Channel Single-Stick Transmitter & 1 module. Same as GDA-505-S, plus landing gear switch & 2 additional channels.
Kit GDA-1205-S, Shpg. wt. 5 lbs. **159.95**

Receiver & 1 module (less batteries).
Kit GDA-1205-2, Shpg. wt. 2 lbs. **59.95**

Receiver battery pack.
Kit GDA-1205-3, Shpg. wt. 2 lbs. **9.95**

Additional Frequency Modules

When ordering specify frequency desired (see list below).

Transmit Module, Shpg. wt. 1 lb. **17.95**

Receive Module, Shpg. wt. 1 lb. **11.95**

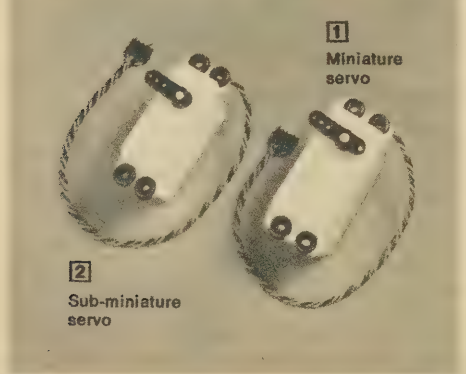
FREQUENCIES AVAILABLE (MHz): 26.995, 27.045, 27.095, 27.145, 27.195, 53.1, 53.2, 53.3, 53.4, 53.5, 72.08, 72.24, 72.16, 72.32, 72.40, 72.96, 75.640 MHz. (When ordering, specify transmit or receive.)

GDA-1205 AND GDA 505 SERIES SPECIFICATIONS

TRANS. — **RF Frequency:** crystal controlled, all bands. **Frequency stability:** within ±.005% on 27 MHz; within ±.002% 53 MHz and 72 MHz. **Temp. Range:** 0 to 160°F. **RF Output Circuit:** pi network. **RF Input Power:** at least 500 mW. **Modulation:** on-off carrier keying. **Approx. Current Drain:** 100 mA on all bands. **Controls:** GDA-1205, 8 channels (4 with trim), on/off, trainer button; GDA-505, 5 channels (4 with trim), on/off switch, trainer button. **Power Supply:** Internal 9.6V 500 mAH Ni-Cad. battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120 volt power line. **Dimensions:** 7" H x 7" W x 2" D. **Net Weight:** 2½ lbs., with battery.

GDA-1205-2 SPECIFICATIONS

RECEIVER — **Local Oscillator Operating Frequency:** crystal-controlled, all bands. **Temperature Range:** 0 to +160°F. **Sensitivity:** 5 μV or better. **Selectivity:** 6 dB down at ±4 kHz; 30 dB down at ±9 kHz. **Current Drain:** 10 mA. **Intermediate Frequency:** 453 kHz. **Power Supply:** 4.8 V battery pack (GDA-1205-3). **Controls:** On/off switch. **Dimensions:** 1 3/32" H x 1 3/16" W x 2 17/64" D. **Net Weight:** 2 ozs.



Low-cost servos with tough cases and heavy gearing

1 **Miniature Servo.** For use with GD-1205 and 505 systems only.
Kit GDA-1205-4, Shpg. wt. 2 lbs. **29.95**

2 **Sub-Miniature Servo.** For use with GD-1205 and 505 systems only.
Kit GDA-1205-5, Shpg. wt. 2 lbs. **29.95**

GDA-1205-4 SPECIFICATIONS

Input Signal: Pulse 1-2 msec. wide, 4 V P-P. **Thrusts:** 4 lbs. min. at rotor. **Travel Time:** 0.5 sec. **Rotary Output Travel:** 90° rotation. **Temperature Range:** 0°-160°F. **Power Requirements:** Battery — 4.8 VDC. Idle current — 15 mA. Stall current — 450 mA; no load current, 80 mA. **Gear Train Backlash:** Less than .002". **Mechanical Output:** 1 rotary arm, 1 rotary wheel. **Position Accuracy:** 1.0%. **Dimensions:** 1 5/8" H. x 15/16" W. x 2 5/32" L. (length includes mounting ears; height includes outputs). **Net Weight:** 1.75 ozs.

GDA-1205-5 SPECIFICATIONS

Input Signal: Pulse 1-2 msec. wide, 4 V P-P. **Thrust:** 4 lbs. min. at rotor. **Travel Time:** 0.5 sec. **Rotary Output Travel:** 90° rotation. **Temperature Range:** 0°-160°F. **Power Requirements:** Battery — 4.8 VDC. Idle current, 15 mA maximum. Stall current, 450 mA nominal; no load current, 80 mA. **Mechanical Output:** 1 large rotary arm, 1 small rotary arm, 1 offset rotary arm, 1 rotary wheel. **Position Accuracy:** 1.0%. **Dimensions:** 1 1/16" H. x 3/4" W. x 2 5/32" L. (length includes mounting ears, height includes the outputs.) **Net Weight:** 1.25 ozs.

Charge a kit — no money down on any kit — see page 50 for details.

get you in on the fun and excitement...the right way!

SAVE ON FLEXIBLE 5-CHANNEL SYSTEMS



5-channel Dual Stick Transmitter GDA-505D

5-channel Single Stick Transmitter GDA-505S

SAVE ON RELIABLE 8-CHANNEL SYSTEMS



8-channel Dual Stick Transmitter GDA-1205D

8-channel Single Stick Transmitter GDA-1205S



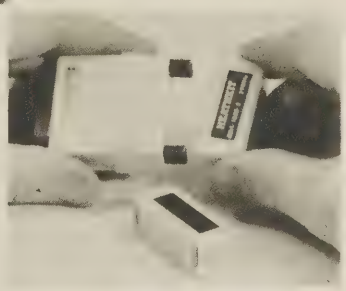
A Heath exclusive — plug-in transmitter modules let you pick any of 17 frequencies. And you can add new modules any time. You'll probably never have to wait for a frequency to open up when you go to the flying field!



Easy to build and service. The hinged transmitter circuit board folds out for easy access. The chassis layout is exceptionally open and uncluttered. A factory-fabricated wiring harness greatly simplifies assembly.



Low current drain. The new lightweight receiver draws less than 10 mA from its optional rechargeable nickel-cadmium batteries. A convenient plug on the on/off switch lets you recharge the battery without unplugging it from the receiver.



Lightweight receiver maintains the same outstanding performance with any of the 17 plug-in frequency modules. Since full-house and 8-channel systems use the same receiver, it's easy to change from 5 to 8 channels whenever you're ready.

Systems Savings with Heathkit R/C Gear!

5-Chnl. Dual-Stick Syst. • GDA-505-D Trans. & 1 module • GDA-1205-2 Rec. & 1 module • GDA-1205-3 Rec. Batt. Pk. • 4 GDA-1205-4 or GDA-1205-5 Servos (or any combo totalling 4). (Shpg. wt. 19 lbs.)
If pur. sep. **319.65**
System Price **274.95**

SAVE $44.70

5-Chnl. Single-Stick Syst. • GDA-505-S Trans. & 1 module • GDA-1205-2 Rec. & 1 module • GDA-1205-3 Rec. Batt. Pk. • 4 GDA-1205-4 or GDA-1205-5 Servos (or any combo totalling 4). (Shpg. wt. 19 lbs.)
If pur. sep. **329.65**
System Price **284.95**

8-Chnl. Dual-Stick Syst. • GDA-1205-D Trans. & 2 modules • GDA-1205-2 Rec. & 2 modules • GDA-1205-3 Rec. Batt. Pk. • 4 GDA-1205-4 or 1205-5 Servos (or any combo totalling 4). (Shpg. wt. 19 lbs.)
If pur. sep. **359.55**
System Price **309.95**

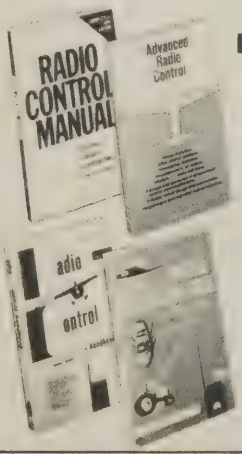
SAVE $49.60

8-Chnl. Single-Stick Syst. • GDA-1205-S Trans. & 2 modules • GDA-1205-2 Rec. & 2 modules • GDA-1205-3 Rec. Batt. Pk. • 4 GDA-1205-4 or 1205-5 Servos (or any combo totalling 4). (Shpg. wt. 18 lbs.)
If pur. sep. **379.55**
System Price **329.95**

Please specify frequency when ordering R/C transmitters and/or receivers. All systems include batteries — a value worth up to $39!



Trainer link accessory. Six-foot coiled cord connects two GDA-1205 or 505 Transmitters for in-flight instruction...makes one unit "master" with override capability...the other, a "slave."
GDA-1205-6, Shpg. wt. 1 lb. **9.95**



Learn more about your R/C hobby

Radio Control Manual — guide to systems & circuits from simple 1 & 2 channel types to digital & pulse code designs. **EDP-157** ..**4.95**

Advanced Radio Control — "how-to" book for planes, boats, robots, trucks, tractors, autos — introduction to automation in rockets & robots at the hobby level. **EDP-158** **4.95**

Radio Control Handbook — covers entire range of control systems. **EDP-159** **6.95**

Model Radio Control — concepts of building simple control projects in R/C.
EDP-160 .....**4.95**

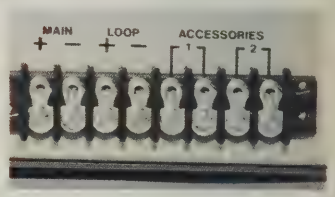
See page 48 for book ordering information

Heath helps make your favorite hobby more fun





Convenient controls for pulse width and frequency and starting voltage insure optimum performance with every engine in your line.



Versatile rear-panel outputs reverse main and loop voltages — even power two sets of low-voltage accessories — great for miniature lights.

Heathkit Power Supply/Transistorized Throttle makes model railroading more realistic

The Heathkit RP-1065 makes any HO or N-gauge layout dramatically more realistic — and at a low kit price that'll leave the competition waiting at the station!

For maximum realism, set the mode switch to "momentum". Then just pull the slide-control throttle toward you and watch the engine gradually build up speed just like a real train. Even at a crawl, the RP-1065's sophisticated pulse circuitry assures smooth, realistic acceleration and braking — great for switching. Braking is independent of the throttle and controlled by a five-position knob. "Run" allows the train to gradually gather speed until it reaches the throttle setting. "Release" maintains its speed without accelerating or braking. Momentarily turning the knob to "normal" puts a short "burst of air" on the brakes. "Quick service" and "emergency" brake the train more rapidly, while still maintaining a realistic momentum effect.

Other circuitry solves many common problems. With ordinary power supplies, an engine climbing a grade may slow down or even stop. But the RP-1065 compensates by raising the output voltage. An internal control selects exactly the compensation you want — maintain a constant speed or even precisely simulate the way a real train slows as it climbs, then speeds up as it descends. AC load compensation automatically helps overcome side rod and gear train binding, tight spots in wheel bearings — even tight sections of track!

The RP-1065 easily powers two HO or N-gauge engines. An overload sensor disconnects the output if there is a short circuit or an excessive load, then signals you with a light on the front panel. After correcting the problem, just flip the brake knob to reset. And the protection circuit's built-in time delay prevents false triggering. Another warning light alerts you to breaks in the circuit. Versatile controls let you use the RP-1065 any way you want. The pulses can be used three ways — on continuously, off or automatically. In automatic, the RP-1065 monitors track voltage and switches the pulses on at any preset level. You can even override the momentum effect by switching to the "direct" mode, allowing you to control both acceleration and braking with the throttle. Other features include — starting voltage control, main and loop switches to reverse track polarity instantly, a forward/reverse switch for engine direction and two low-voltage AC accessory outputs, one with front-panel on/off switch.

You can build the RP-1065 easily in just a couple of evenings, even if it's your first kit. There's just one circuit board to wire and a plug-in integrated circuit simplifies construction. 120 VAC. 4¾ x 9½ x 8½".

Kit RP-1065, Shpg. Wt. 8 lbs. **79.95**



Turn your music into a dazzling light show

The TD-1006 Color Organ adds exciting sights to your sound system. With its extra wide dynamic range, it translates any kind of music into pulsing, whirling starbursts of color. Just connect the TD-1006 to the speaker leads of any sound source (except AM radio). Without effecting the sound, active filters separate the audio signal into four frequency bands, each with 35 brilliantly colored lights — red for bass, blue for low-midrange, green for upper-midrange and amber for treble (140 lights total). The lights pulsate in time to the music creating spokes of color that seem to swirl.

Just wire the two circuit boards and install the pre-strung lights in the factory-assembled cabinet. A single knob on the side controls sensitivity and turns power on or off. Just 4½" deep — even hang it on the wall. Walnut-grained vinyl-clad case, black-out front panel. We think you'll agree music has never looked better.

Kit TD-1006, Shpg. Wt. 32 lbs. **79.95**

TD-1006 Specifications

Dynamic Range: 25 dB, minimum. **Input Signal:** 1 volt RMS min. to 22 volts RMS max. **Source Protection:** line isolation. **Power Requirement:** 120/240 VAC, 50-60 Hz, 80 watts max. **Dimensions:** 22¾" W x 22¾" H x 4½" D. **Net Weight:** 20 lbs.

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit Modulus™—a new era in hi-fi

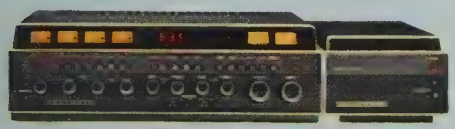
In performance, features, versatility and styling, the MODULUS™ system is destined to become the standard by which other hi-fi systems will be judged.

The AN-2016 is the "heart"...



Heathkit is proud to present a completely new idea in high-fidelity — Modulus™. Designed to give you "total control" of your musical environment, it lets you create exactly the system you want — stereo or 4-channel — with your choice of capability and power. Stereo...use the AN-2016 and either of its matching stereo amplifiers...even use it with our AA-1640 "super-amp"! Discrete 4-channel...use the AN-2016 with two stereo amplifiers. Dolbyized FM...the AD-1504 plug-in Dolby FM module. 4-channel SQ...the AM-1503 SQ module. Discrete disc CD-4 ...the AD-1507 CD-4 module. Each of the components in the Modulus system rivals the finest separate components available, yet they're far more convenient to use. And, because of their modular design, you can change power or add capability when YOU want to, without "black box" adapters and yards of cable!

...of a quality stereo system



The heart of the MODULUS system is the AN-2016 Digital AM/FM Stereo/Quadraphonic Tuner/Preamplifier. It incorporates a superb AM/FM tuner with digital readout, an exceptional stereo/quadraphonic preamplifier, headphone amplifiers, and an unusually versatile control center. In performance, convenience and reliability, we believe the AN-2016 is unmatched.

On either AM or FM, four ½"-tall LED digits display the frequency far more accurately than an ordinary dial, and the AN-2016 displays only those frequencies which are actual broadcast channels. A signal-strength meter helps you fine tune and a center-channel meter accurately locates the point of lowest FM distortion. Scope outputs help align your FM antenna for minimum multipath distortion. The FM interstation muting is fully adjustable and can be switched on or off from the front panel. Finally, the phase-locked loop multiplex demodulator assures excellent stereo separation — over 40 dB at 1000 Hz.



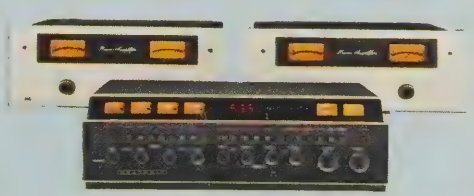
...of a complete 4-channel system

Even the AM section is the finest we've ever offered — dual-gate MOSFET's in the front-end and mixer combine excellent sensitivity with extremely high resistance to overload. A computer-designed 9-pole LC filter maintains outstanding selectivity with absolutely no alignment.

With the introduction of the AN-2016, Heath engineers have reduced distortion and noise to what we believe are completely inaudible levels. Overload distortion is almost non-existent since the AN-2016 reaches full output with a 170 mV signal, yet doesn't overload until the high-level input reaches at least 3 volts!

Our special attention to the phono amplifier has resulted in a design which can drive the preamplifier to full output with as little as 2 mV, yet does not overload until the input reaches 60 mV. This provides a dynamic range of over 94 dB — considerably better than most records. This extra margin minimizes overload distortion — even crescendoes can be heard with excellent definition. And in the softest musical passages, the AN-2016 maintains the same superb definition because hum and noise are 75 dB below a 10 mV input.

A muting circuit in the AN-2016 protects your speakers from power on/off surges. In addition, four lighted level meters constantly monitor the output. The meters feature a wide 40 dB dynamic range, to follow the softest and loudest passages without switching ranges. The meters use "peak-responding" circuitry to display instantaneous peaks as short as a record click, making them extremely useful as overload indicators. The meters are calibrated in both decibels and volts of output, so you can easily see whether the AN-2016 or an associated power amplifier is being driven to clipping.



...of one of the world's finest high-power music systems

The separate bass and treble controls for the front and rear channels utilize Baxandall circuitry. The turnover points for the tone controls have been moved toward the frequency extremes, allowing you to effectively make corrections with a minimum effect on the mid-range. The Tone-Flat button bypasses the tone controls; loudness, high and low filters provide additional versatility.



The AN-2016's FM muting is fully adjustable — you can block out only those stations you consider too noisy for listening. Direct planetary drive tuning is smooth and positive with absolutely no backlash. And, of course, there is a complete range of inputs and outputs — including separate CD-4 and stereo phono inputs and inputs and outputs for a stereo or discrete 4-channel tape recorder — even front-panel dubbing jacks which let you play or record tapes without disturbing the permanent connections.

Panel lighting is functional as well as beautiful. Whenever the AN-2016 is switched on, the four output meters and the legends above the pushbuttons light. The digital display and meters appear only when you are listening to AM or FM. And only the meters you need light — signal-strength for AM; signal-strength and center-tune for FM. The tips of the pushbuttons light when they are pressed in, so you can see exactly what functions are engaged, even from across the room.

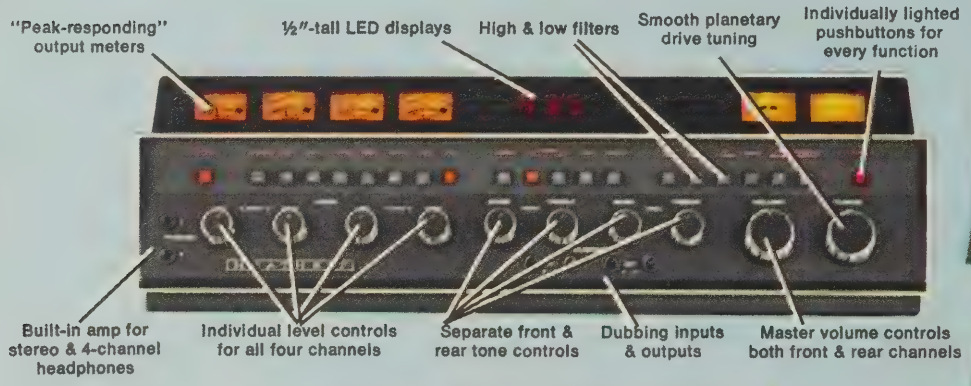
The AN-2016's massive diecast front-panel puts an impressive array of controls at your fingertips — all logically grouped for easy use. And the cabinet is accented by a black textured metal cover and simulated walnut-grained metal end panels. The total impression is tastefully luxurious. Truly, an AN-2016 flanked by its matching amplifiers is an impressive addition to any room.

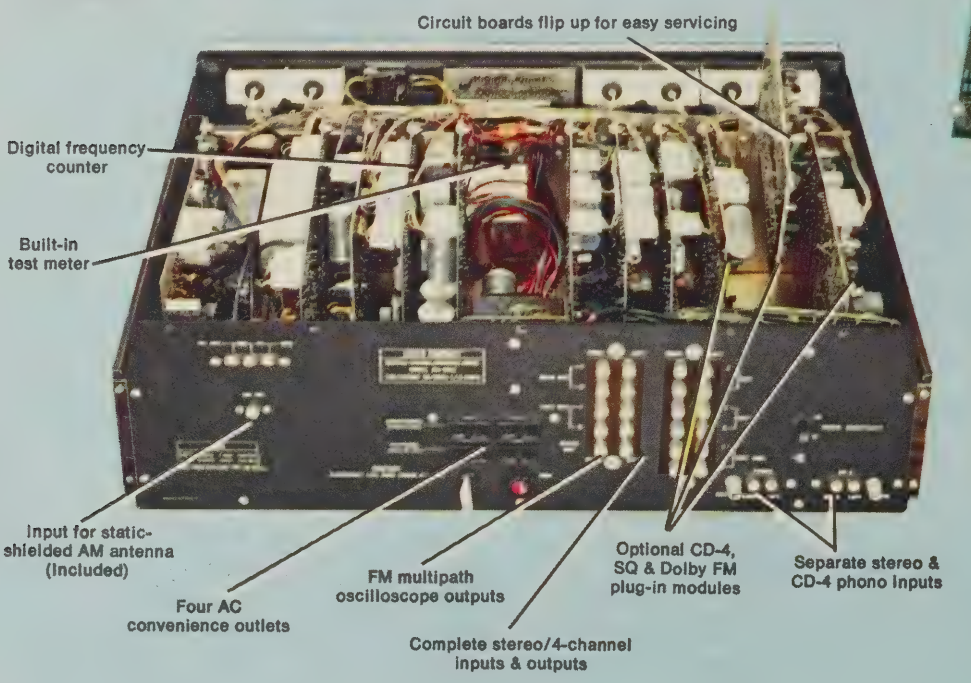
With 28 IC's, 134 transistors and 55 diodes, obviously some kitbuilding experience would be helpful in assembling the AN-2016. But it is not a difficult kit. Most parts mount on one of the 14 printed circuit boards and 4 wiring harnesses minimize point-to-point wiring. Eight of the boards and the three optional plug-in modules can be flipped up while the AN-2016 is operating, greatly simplifying alignment and servicing. A built-in test meter lets you double-check each circuit board as you finish it.

Kit AN-2016, Shpg. wt. 37 lbs. **599.95**

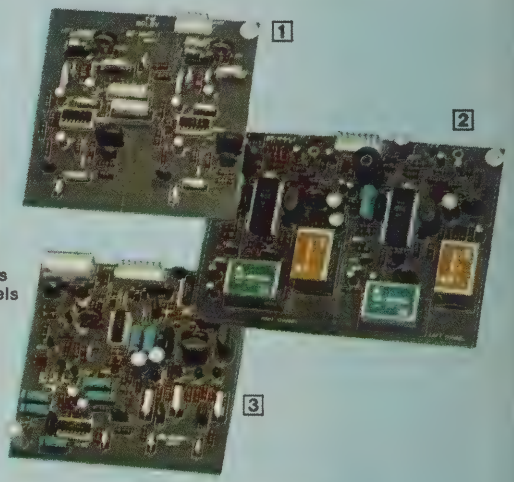
See matching power amplifiers (at right) and modules (below).

Here's why we think the AN-2016 is the world's most versatile control center





Plug-in modules make your AN-2016 more versatile



1 Dolby FM Module

Enjoy the reduced noise and increased dynamic range of specially-encoded 25 μsec. de-emphasis Dolby FM broadcasts. Assemble and install it in less than an evening.

Kit AD-1504, Shpg. wt. 2 lbs. **39.95**

2 CD-4 Demodulator Module

Enjoy the spacious quadraphonic sound of CD-4 discrete 4-channel records. Easy one-evening assembly. Includes calibration record. For use with discrete 4-channel cartridge.

Kit AD-1507, Shpg. wt. 3 lbs. **79.95**

3 SQ Decoder Module

Sophisticated circuitry with full-logic and variable blend enhancement provides excellent quadraphonic separation from matrixed records, tapes and FM. Assemble and install it in just one evening.

Kit AM-1503, Shpg. wt. 1 lb. **49.95**

AN-2016 SPECIFICATIONS

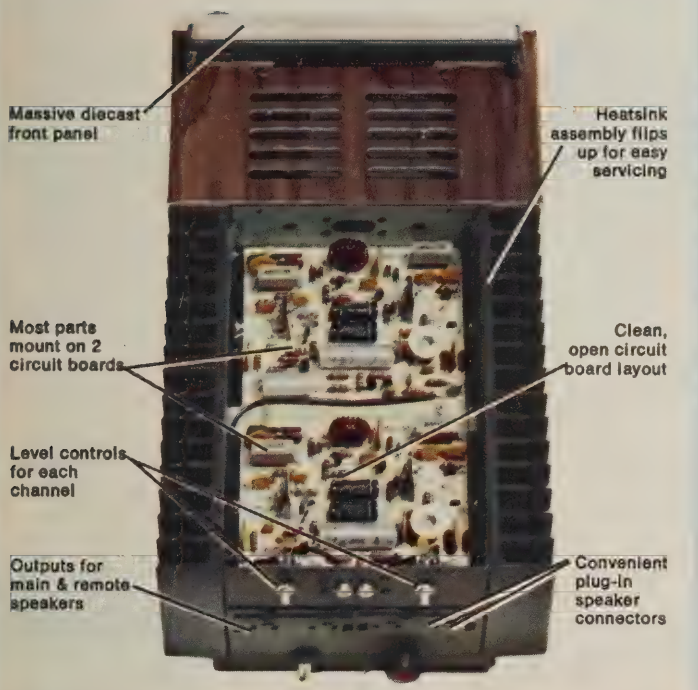
PREAMPLIFIER — Frequency Response: —0.5 dB at 10 Hz and 30 kHz. **Total Harmonic Distortion:** less than 0.05% at 1.5 V into 20K ohms. **IM Distortion:** less than 0.05%. **Hum & Noise (unweighted):** phono, —75 dB ref. to 10 mV; high-level, —80 dB ref. to .25V. **Bass Control:** ±15 dB at 20 Hz nominal. **Treble Control:** ±12 dB at 20 kHz nominal. **Hi Filter:** —3 dB at 7 kHz ±1 kHz, 12 dB/octave slope. **Lo Filter:** —3 dB at 30 Hz ±2 Hz, 12 dB/octave slope. **Input Sensitivity (for 1.5 V output):** phono, 2/6 mV ± 1dB (switch selected). **Phono Equalization:** ±0.5 dB of RIAA standard from 20-20,000 Hz. 100 K ohms shunted by 300 picofarads. **Output Voltage:** 1.5 V RMS. **FM (Monophonic) — Sensitivity:** 1.7 μV (IHF); 3.5 μV for 50 dB S/N. **Signal-to-Noise Ratio:** 68 dB at 1000 μV. **Selectivity:** greater than 100 dB. **Capture Ratio:** 1.3 dB. **Spurious Rejection:** greater than 90 dB. **IF Rejection:** greater than 100 dB. **Image Rejection:** greater than 90 dB. **Total Harmonic Distortion:** 0.3% at 1 kHz. **IM Distortion:** less than 0.1%. **AM Suppression:** 68 dB at 1000 μV. **Antenna Inputs:** 300Ω balanced; 75Ω unbalanced. **— FM (Stereophonic) — Stereo Sensitivity:** 35 μV for 50 dB S/N, 1% THD. **Total Harmonic Distortion:** 1 kHz, .35%. **Stereo Separation:** 40 dB at 1 kHz; 20 dB at 15 kHz. **SCA Rejection:** 65 dB. **— AM — Sensitivity:** 6 μV for 20 dB S+N/N. **Selectivity:** more than 60 dB. **Signal-to-Noise Ratio:** more than 48 dB. **Harmonic Distortion at 1000 μV, 30% mod.:** less than 1.0% at 400 Hz. **Antenna:** external static-shielded loop. **GENERAL—Power Requirement:** 120/240 VAC, 60/50 Hz. **AC Convenience Outlets:** 2 switched , 2 unswitched (500 watts max.). **Dimensions:** approx. 6½" H x 19" W x 14½" D.

"SQ" is a trademark of CBS, Inc.; "Dolby" is a trademark of Dolby Labs and "CD-4" is a trademark of the Japan Victor Company.

Charge a kit — no money down on any kit — see page 50 for details.

Pick the power you need for your MODULUS System

35 Watts (AA-1505) or 60 Watts (AA-1506) minimum rms, per channel into 8 ohms at less than 0.1% total harmonic distortion from 20-20,000 Hz.





Feature-packed power amplifiers... exceptional performance at a budget price

- ***Exciting styling to match the incomparable AN-2016***
- ***Simplified design for easy assembly***

A perfect match for the AN-2016 in styling and performance — and you should also consider using them with most other quality preamps. Just compare the specs — intermodulation distortion is less than 0.1% at full power and drops to a mere 0.05% at 0.1 watt. Frequency response is exceptionally wide and flat — down just 0.5 dB at 8 Hz and 45,000 Hz. And, with a damping factor of over 60, you can count on the AA-1505 and 1506 to provide high definition bass response.

Pushbutton main and remote speaker switching, lighted power button, and Heath's unique polarized speaker connectors which help eliminate phasing problems. Unlike many other power amps — the AA-1505 and 1506 look so good, you'll want people to see them — massive side-mounted black heat sinks and walnut-grained metal side panels. Sophisticated functionalism.

Remarkably easy to build — even for first-time kitbuilders. The two printed circuit boards mount directly on the heat sinks, minimizing point-to-point wiring.

Kit AA-1505, Shpg. wt. 25 lbs. **159.95**
Kit AA-1506, Shpg. wt. 26 lbs. **179.95**

OTHER AA-1506/1505 SPECIFICATIONS

Hum and Noise: 95 dB (referred to rated power, inputs shorted). **Separation:** 60 dB. **Input Sensitivity:** 1.5 volts for rated output. **Input Impedance:** more than 15K ohms. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 8″ W x 5⅝″ H x 14 3/32″ D. **Net Weight:** approx. 21 lbs.



Kit-building convenience you'll appreciate

A built-in test meter lets you check out your work before turning on the amplifier. The circuit board/heat sink assembly can be flipped up or unplugged and removed to simplify trouble-shooting and servicing.

Complete Modulus System — Sensational Performance and Sound at a Money-Saving Price

Save up to $154.89

- ***Heathkit AN-2016 Modulus AM/FM Control Center***
- ***Heathkit AA-1506 Stereo Power Amplifier***
- ***Two Heathkit AS-1373 Speakers***
- ***Dual 1249 Turntable with base and your choice of Empire 2000E/III or Shure M91ED Stereo Cartridge***

If purchased separately, up to $1446.65

Heath Price $1291.76

ARS-110, Shpg. wt. 184 lbs., Exp./Frt. **1291.76**

For a quadraphonic system, order an additional amplifier and pair of speakers. These additional items qualify for the Heath 5% system discount (see page 45) when ordered with the system above.



Declare Your Independence

Heathkit "Superamp" for superior sound

200 watts, minimum RMS, per channel into 8 ohms with less than 0.1% total harmonic distortion from 20-20,000 Hz



HEATH charg-a-kit REVOLVING CHARGE

$439.95
less meters

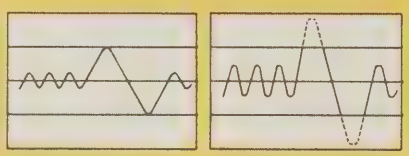
Optional meters shown installed

Who needs all that power?

Many hi-fi systems need a "super-amp" like the AA-1640 for good scentific and musical reasons. As sounds become louder, the ear becomes less sensitive. For one sound to seem twice as loud as another (10 dB louder), requires *10 times* as much power. A 3 dB change is barely audible, yet it requires twice as much power.

In an average-sized room, acoustic suspension speakers may require 20 watts per channel to produce a reasonable listening level — about 90 dB. But when a momentary musical peak of 10 dB comes along, your amplifier must try to produce 200 watts per channel. Tone controls, loudness circuits, and equalizers make the same demands.

And if your amp can't deliver that much power, it clips off the peaks as shown.



unclipped clipped

Clipping causes distortion and reduces the dynamic range — the contrast between loud and soft passages. Music sounds constricted, dull and unreal. Clipping also produces harmonics which can actually damage your tweeters.

A high power amplifier can make a big difference. Its wider dynamic range lets more of the live-performance realism come through loud and clear. Perhaps the most striking difference you'll hear is the improved definition of music...solid bass free of "boom" and distinct note for note...accurate treble clearly defined and open.

If your music system uses low-efficiency acoustic suspension speakers, only a superamp like the Heathkit AA-1640 can help them deliver their finest sound.

Heathkit AA-1640 — one of the world's finest stereo power amplifiers. It helps your system sound its best.

In sheer power and exceptionally low distortion, the Heathkit AA-1640 is an extraordinary amplifier. As Julian Hirsch said in the May issue of *Stereo Review:* "The electrical performance of the Heath AA-1640 makes comment superfluous. In every respect it ranks with the finest high-power amplifiers on the market. We were constantly impressed with the conservatism of its construction and ratings." That's quite a tribute to the AA-1640's performance.

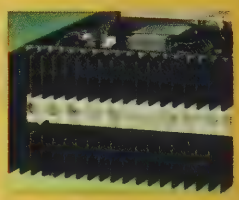
Despite its enormous power, the AA-1640 is also an exceptionally quiet amplifier. Hum and noise are an inaudible 100 dB below full output, so you can hear music over a velvety background of silence. And you can enjoy all that quiet because there's no noisy fan. Even if it is used as a PA amplifier, the AA-1640 requires only normal ventilation and that kind of rugged, conservative design pays off in increased reliability.

Automatic circuitry helps protect your speakers. A 10-second delay protects your speakers from turn-on thumps and instantly disconnects them when you turn the power off. This delay circuit also disconnects the speakers if it detects DC or extremely low-frequency AC at the outputs. Automatic thermal shutdown helps prevent damage from overheating. Finally, speaker fuses are located in the primary feedback loop — an exclusive Heath design which maintains a high damping factor for excellent bass definition.

The optional peak-responding meters continuously monitor the output, accurately showing how much power is reaching your speakers. The backlighted scales are calibrated from −30 to +3 dB and from 0.2 to 200 watts into 8 ohms. Special circuitry allows them to respond to peaks as short as a record click, making them useful as overload indicators. The meters can be installed when the amplifier is built, or later. However, if you buy the meters at the same time you buy the amplifier, you'll save $19.95.



Optional peak-responding meters are calibrated in both decibels and watts. Order them with the amp and save.



Sixteen output transistors and 12 lbs. of heat-sink assure adequate heat dissipation without noisy fans!

Front-panel controls include pushbutton power on/off, left and right channel gain controls, and LED power and high temperature indicators. Exclusive plug-in speaker connectors simplify hookup and help insure correct speaker phasing.

To appreciate its real quality, the AA-1640 should be used with only the finest preamplifiers such as the Heathkit AP-1615 (facing page) or AN-2016 (see pages 27-28). Hear music as you've never heard it before — add the AA-1640 to your system. It's an experience in superior sound.

Kit AA-1640, less meters,
Shpg. wt. 72 lbs. **439.95**

Kit AAA-1640-1, Output meters only,
Shpg. wt. 4 lbs. **69.95**

Kit AA-1640 & Kit AAA-1640-1,
Shpg. wt. 72 & 4 lbs. **489.95**

OTHER AA-1640 SPECIFICATIONS

Frequency Response: −1 dB, 7 Hz to 50 kHz; −3 dB, 5 Hz to 100 kHz. **Intermodulation Distortion:** less than 0.1% from .25 to 200 watts. **Damping Factor:** greater than 50. **Hum and Noise:** Less than 400 μV or 100 dB below full output. **Channel Separation:** 50 dB, min. **Input Impedance:** 50k ohms, min. **Input Sensitivity:** 1.5 V. **Net Weight:** 58 lbs. **Dimensions:** 19" W x 7¼" H x 18" D. **Power Requirement:** 120/240 VAC, 60/50 Hz.

Charge a kit — no money down on any kit — see page 50 for details.

NEW Heathkit Stereo Preamp and Equalizer

1 AP-1615 Stereo Preamplifier
A truly outstanding preamplifier with performance and specifications comparable to units costing twice or even three times as much.

$129.95



2 AD-1305 Audio Equalizer
Use with the AP-1615 or any quality component with tape monitor input for accurate and complete tone control versatility.

$119.95

1 Heathkit AP-1615 Stereo Preamplifier/Control Center

The new Heathkit AP-1615 Stereo Preamplifier offers the kind of specifications and features normally found on preamps costing much more. While it can be used with any high quality power amplifier, it's a perfect match for the AA-1640 "Superamp".

Harmonic and IM distortion are insignificant, less than 0.05%. Hum and noise are an extremely quiet —65 dB on phono and —85 dB on high-level sources; frequency response is a ruler-flat +0, —0.2 dB from 20-20,000 Hz. The extremely wide dynamic range of the AP-1615, 100 dB for all inputs, means that even the loudest and most complex musical passages come through with minimum distortion. In fact, the sound quality of the AP-1615 is limited only by the quality of the associated equipment and the program source.

As a "flat response" stereo preamplifier, the AP-1615 provides outstanding fidelity from any sound source. And, if you need tone controls, the optional AD-1305 (below) offers far more versatility and precise tone adjustment than ordinary bass and treble controls.

Has the features required for a truly superlative stereo system: a relay instantly mutes the output when power is turned on or off to prevent "thumps." A special sub-sonic filter (always on in phono mode) eliminates the noise from turntable rumble, record warp and room vibrations which causes wasted power and IM distortion at the speaker (especially important with high power amplifiers).

Has high-frequency filter, two phono inputs, aux. and tuner inputs, tape monitor, center-detent balance control, mono switch, headphone jack and LED power indicator. Front panel dubbing inputs and outputs for easy temporary recording setups without displacing permanent rear-panel connections.

Handsome styling too, with pewter-anodized front panel, black metal top and solid walnut end panels.

The AP-1615 is an exceptionally easy kit to build. Most parts mount on a single printed circuit board, and point-to-point wiring is kept to a minimum. Even if you're a first-time kit builder, you can build a better preamp than you probably thought you could afford. It's just one more way Heath offers you more for your money.

Kit AP-1615, Shpg. wt. 12 lbs. **129.95**

AP-1615 SPECIFICATIONS

Input Sensitivity: Phono, 2 mV. Hi-Level (Tuner, Tape, Aux., Tape Mon and Tape Dub), 180 mV. **Input Overload:** Phono, over 100 mV. Hi-Level, over 10 V. **Hum and Noise:** Phono, —65 dB (2 mV input); Hi-Level, —85 dB (180 mV input). **Input Impedance:** Phono, 47 k ohms shunted by 65 pF. Hi-Level, 50 k ohms shunted by 80 pF. **Frequency Response:** Phono, ±0.5 dB, 30 Hz to 15 kHz. Hi-Level, ±.2 dB, 20 Hz to 20 kHz. **Rated Output:** 1.5 V at rated sensitivity. **Output Impedance:** 500 ohms. **Tape Output:** 180 mV. **Harmonic Distortion:** less than .05% from 20 Hz to 20 kHz at 1.5 V output. **Channel Separation:** 50 dB at 1 kHz. **Filters:** Low, —3 dB at 15 Hz, —12 dB octave/slope. High, —3 dB at 7 kHz, —12 dB octave/slope. **Headphone Amplifier: Harmonic Distortion:** 0.1% (4 V min. into 100 ohms). **Dimensions:** 4½" H x 17½" W x 8⅛" D. **Power Requirement:** 120/240 VAC, 60/50 Hz.

2 Heathkit AD-1305 5-band, 2-channel Audio Equalizer

The AD-1305 is an audio equalizer offering complete tone control versatility with five slide controls for each stereo channel, each control handling its own portion of the frequency spectrum. It is designed for use with the AP-1615 above, or any receiver or amplifier having a preamp output and power amp input, or tape monitor.

Each control provides a 12 dB per octave slope, for precise corrections in each portion of the frequency spectrum, without overlapping. You can highlight instruments, create special sound effects, "engineer" your music the way YOU want to hear it! A center detent allows exact "0" dB setting bypassing each band; a tone flat switch bypasses the equalizer entirely, returning the system to flat response.

Adjusts response to allow precise corrections for room acoustics, differences in cartridges and speakers, even deficiencies in program sources. Can also be used with tape recorders to filter old or scratchy records or broadcasts before recording; and with PA and musical instrument amplifiers for anti-feedback control or special effects.

The active bandpass filters in the AD-1305 use large, fully-shielded coils, ensuring extremely low distortion even at full boost and cut. Excellent overload characteristics too. Rated output is 1.5 V, overload does not occur until output is at least 5 volts. The complementary symmetry output circuit permits the AD-1305 to be used with virtually any preamp and amplifier. Harmonic distortion is a mere 0.05% from 20 Hz to 20 kHz; hum and noise are a full 90 dB below rated output (1.5 volts).

The AD-1035's own tape monitor lets it be used in a receiver's tape monitor circuit without losing monitor capability. Has tape monitor, tone flat and power-on switches, switched and unswitched AC outlets for associated equipment. Matched in size and style to the AP-1615 above.

Kit AD-1305, Shpg. wt. 11 lbs. **119.95**

AD-1305 SPECIFICATIONS

Input Impedance: 100 k ohms shunted by 200 pF. **Output Impedance:** 100 ohms. **Rated Output:** 1.5 V rms. **Overload:** 5 V rms. **Signal-to-Noise Ratio:** 90 dB below 1.5 V. **Total Harmonic Distortion:** .05% from 20 Hz to 20 kHz at 1.5 V output. **IM Distortion:** .05% at 1.5 volts. **Frequency Control Ranges:** (separate controls for each channel), 30-125 Hz, 125-500 Hz, 500-2000 Hz, 2000 Hz to 8 kHz, 8 kHz — 32 kHz. **Overall Gain (flat):** Zero dB (unity gain). **Slope of Filters:** 12 dB per octave. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 4½" H x 17½" W x 8" D.

The Famous Heathkit AR-1500A—one

Declare Your Independence

charg-a-kit

These AR-1500A systems are carefully selected to provide the best sound for the money in each price category—choose the one you like

Save up to 129.14



- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-104 Speakers (See pg. 42)***
- ***B·I·C 980 Automatic Turntable with base and your choice of Shure M91ED or Empire 2000E/III Cartridge (See page 44)***

ARS-107, Shpg. wt. 187 lbs.,
Exp./Frt. **802.51**

If purchased separately, up to $931.65

Heath Price $802.51

Please Specify Cartridge When Ordering

Save up to 132.14



- ***Heathkit AR-1500A AM/FM Stereo Receiver and walnut veneer case***
- ***Two AS-1373 Speakers (See pg. 41)***
- ***Dual 1228 Automatic Turntable with Base and Choice of Shure M91ED or Empire 2000E/111 Cartridge (see page 45)***

ARS-108, Shpg. wt. 209 lbs.,
Exp./Frt. **878.51**

If purchased separately, up to $1010.65

Heath Price $878.51

Please Specify Cartridge When Ordering

Save up to 156.14



- ***Heathkit AR-1500A AM/FM Stereo Receiver with walnut veneer case***
- ***Two AS-101 Speakers (See pg. 42)***
- ***Dual 1249 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/111 Cartridge (see page 45)***

ARS-109, Shpg. wt. 338 lbs.,
Exp./Frt. **1315.51**

If purchased separately, up to $1471.65

Heath Price $1315.51

Please Specify Cartridge When Ordering

Audio-Scope visually monitors stereo and 4-channel systems



$219.95 **Shown with optional walnut veneer case**

Professional-quality audio oscilloscope lets you measure phasing, response and channel separation on all stereo and quad systems; even indicates signal-strength, FM center tune, FM multipath distortion on Heathkit AN-2016, AR-1500A and other receivers with multipath scope outputs. Has built-in audio oscillator for frequency response checks; rear panel inputs for left-front, left-back, right-front and right-back or FM multipath. A front panel input lets you use the AD-1013 as a conventional oscilloscope and there's also a front panel audio oscillator output. With black metal cabinet, optional case below.

Kit AD-1013, Shpg. wt. 19 lbs. **219.95**

Walnut veneer case.
ARA-1500-1, Shpg. wt. 8 lbs. **24.95**

ATTENTION: AR-15 and AJ-15 OWNERS: Add multipath provision in less than an evening. Makes AR-15 and AJ-15 compatible with AD-1013 or any DC coupled oscilloscope.

Kit ARA-15-1, Shpg. wt. 1 lb. **24.95**

AD-1013 SPECIFICATIONS

FRONT PANEL—Scope Input: Vertical Sensitivity: 25 millivolts P-P/cm. Input Impedance: 100 kΩ. Frequency Response: 5 Hz to 200 kHz ±3 dB. **Audio Oscillator Output:** Range 20 Hz to 20 kHz. Voltage Level: 2 mV to 3 volts (rms) (variable). **Output Variation:** .25 dB 20 Hz to 20 kHz. **Output Impedance** (front panel jack): Approximately 600Ω. **Calibrator Voltage:** 1.0 volt P-P ±5%. **Total Harmonic Distortion:** 1% or less. **REAR PANEL—Oscillator Output Impedance:** 6000Ω. **Multipath Input (Scope Horizontal and Scope Vertical):** Sensitivity: 25 mV P-P/cm. Input Impedance: 100 kΩ. **Left Front, Right Front, Left Back and Right Back Inputs:** Sensitivity: 25 mV P-P/cm. Input Impedance: 100 kΩ. Frequency Response: 5 Hz to 200 kHz, ±3 dB. **4-Channel Input:** Sensitivity: 1 volt P-P/cm. Input Impedance: 5000 Ω. **GENERAL—Triggered Sweep Generator:** Range: 10 Hz to 100 kHz. **Power Requirement:** 120 or 240 volts AC, 60/50 Hz, 15 watts. **AC Outlet** (on rear panel): Unswitched. **Dimensions** (overall): 5⅛" H x 18½" W x 13½" D.

Charge a kit — no money down on any kit — see page 50 for details.

of the world's superior Stereo Receivers



Shown in optional Walnut Veneer Case.

AR-1500A Power Output: 60 Watts, Minimum RMS, Per Channel into 8 ohms with less than 0.25% Total Harmonic Distortion from 20-20,000 Hz.

The AR-1500A delivers the kind of clean, low-distortion power and excellent AM and FM performance others only talk about. To see for yourself, compare our specifications with any other receiver—kit or assembled. The numbers speak for themselves. 60 watts, minimum RMS, per channel into 8 ohms with less than 0.25% total harmonic distortion from 20-20,000 Hz. Intermodulation distortion is an infinitesimal 0.1% at full power or at one watt. Frequency response extends from 9 Hz to 80,000 Hz, +0, −1dB. And if those numbers sound pretty impressive, remember that they're guaranteed *minimum* specifications!

A factory-assembled FET front-end provides high sensitivity and excellent resistance to overload. IHF sensitivity is just 1.8 μV, so you hear more stations and less noise. And fixed LC IF filters help keep stations separate. A phase-locked multiplex demodulator provides over 40 dB of midband FM stereo separation. Signal-strength and center-channel meters make tuning easy and accurate. There's even a front-panel control so you can set the FM muting threshold to suit reception conditions in your area.

Pushbuttons instantly select tape, tape monitor, auxiliary, phono, AM, FM stereo stations only, or FM with automatic stereo/mono switching. Pushbuttons also control main and remote speakers and, for private listening, there are two front-panel stereo headphone jacks. Has multipath scope outputs, switchable loudness compensation, a tone flat button to bypass the tone controls for "flat" response, a blend button to reduce noise on weak stereo stations and individually adjustable level controls for each channel of every input.

The AR-1500A is one of our easiest kits to build. A clearly illustrated manual shows you everything you need to know—even how to solder and, after assembly, troubleshoot. You start by building a simple test meter which then allows you to test each completed circuit board. Most of the circuitry fits on 10 circuit board modules, nine of which plug into the chassis. Two factory-fabricated wiring harnesses eliminate most point-to-point wiring. The plug-in boards can be flipped up or extended from the chassis while the receiver is operating. From start to finish, the large fully-illustrated assembly manual guides you step by step, even if you're a first-time kitbuilder.

Build-it-yourself, service-it-yourself savings. Because you build the AR-1500A yourself, you can also make necessary repairs—and that lets you keep your receiver "tuned up" and in top condition for years to come.

Beautifully styled too. A blackout dial accents the massive, diecast front panel. And you can custom mount the receiver or order the optional walnut veneer case. Either way, it's one beautiful receiver at a beautiful, build-it-yourself price. Less case.

Kit AR-1500A, Shpg. wt. 53 lbs. **399.95**

Walnut veneer case.
ARA-1500-1, Shpg. wt. 8 lbs. **24.95**

Get the most out of your Heathkit System with these valuable books



Dictionary of Audio and Hi-Fi—non-technical definitions of over 2000 hi-fi terms.
EDP-200 . . . . . **5.95**

Audio Cyclopedia—the most comprehensive & authoritative work on audio available—3650 entries in all.
EDP-113 . . . . . **34.00**

99 Ways to Improve Your Hi-Fi—Projects that enhance your hi-fi enjoyment.
EDP-105 . . . . . **3.50**

Guide to High Fidelity—non-technical presentation of stereo and 4-channel components, how they work, how to maintain, understanding specs, how to select, and a glossary of terms.
EDP-194 . . . . . **4.50**

See page 48 for book ordering information.

AR-1500A SPECIFICATIONS

AMPLIFIER—Frequency Response (1 watt level): −1 dB, 9 Hz to 80 kHz; −3 dB, from less than 5 Hz to 120 kHz. **Intermodulation Distortion:** Less than 0.1% at full power; less than 0.1% at 1 watt. **Damping Factor:** Greater than 60. **Input Sensitivity:** Phono, 1.8 millivolts; Tape, 140 millivolts; Aux, 140 millivolts; Tape Mon, 140 millivolts. **Hum & Noise:** Phono (10 millivolt reference), −63 dB. Tape and Aux (0.25 volt reference), 75 dB.—**FM (Monophonic)—Frequency Response:** ±1 dB, 20 to 15,000 Hz. **Antenna:** 75 or 300-ohm. **Sensitivity:** 1.8 μV.* **Selectivity:** 90 dB.* **Image Rejection:** 100 dB.* **IF Rejection:** 100 dB.* **Capture Ratio:** 1.5 dB.* **AM Suppression:** 50 dB.* **Harmonic Distortion:** 0.5% or less.* **Intermodulation Distortion:** 0.1% or less.* **Hum & Noise:** 60 dB.* **Spurious Rejection:** 100 dB.*—**FM (Stereophonic)—Channel Separation:** 40 dB or greater at midfrequencies; 35 dB at 50 Hz; 25 dB at 10 kHz; 20 dB at 15 kHz. **Harmonic Distortion:** 0.5% at 1000 Hz with 100% modulation. **19 kHz and 38 kHz Suppression:** 55 dB or greater. **SCA Suppression:** 55 dB.—**AM—Sensitivity:** 50 μV with external input; 300 μV per meter with radiated input. **Selectivity:** 20 dB at 10 kHz. **AM Antenna:** Built-in rod type; connections for external antenna and ground. **Image Rejection:** 70 dB at 600 kHz; 50 dB at 1400 kHz. **IF Rejection:** 70 dB at 1000 kHz. **Harmonic Distortion:** Less than 2%.* **Hum and Noise:** 40 dB.* **GENERAL—Accessory AC Outlets:** Two. One switched and one unswitched (240 watts). **Power Requirement:** 120 or 240 volts 60/50 Hz AC. 40 watts idling (zero output) and 356 watts at full output. **Dimensions:** Overall—18½" W x 5⅛" H x 13⅞" D.

*Rated IHF (Institute of High Fidelity) Standards.

Stereo or 4-Channel, Components or Systems,



Shown in Optional Pecan Veneer Case

$339.95

Heathkit AR-29 AM/FM Stereo Receiver for cost-conscious connoisseurs

35 watts, minimum RMS, per channel into 8 ohms at less than 0.25% total harmonic distortion from 20-20,000 Hz

The AR-29 AM/FM stereo receiver is a best-seller that offers you no-compromise performance at a low build-it-yourself kit price. Its overall quality design, along with conservative specifications, assure a level of performance normally associated with far more expensive units. Has pushbutton function selectors, slide controls, FM muting and stereo blend, tape monitor and main/remote speaker switching. Tuning is as easy and accurate as you could want, with a wide, clearly marked slide-rule tuning dial and two meters; signal strength for both AM and FM, center channel for FM. Special level controls for each channel of all inputs let you switch from phono to tuner to tape without changing volume. The AR-29 provides as much power as you're likely to need for most listening areas with about half the distortion of many competitive models. Intermodulation distortion is extremely low too; less than 0.2% at full power and less than 0.1% at 1 watt. As the audio experts have noted, the AR-29's sound is solid, clean and well-defined, which is what hi-fi is all about. Kit assembly is easy and fun — most parts mount on printed circuit boards that simply plug into the unit, and a pre-assembled harness with individual wires stripped and cut to length further simplifies construction. A built-in meter, with test probes and function switch, lets you check yourself every step of the way during assembly, and aids in servicing. With black metal cabinet, order wood case below.

Kit AR-29, Shpg. wt. 34 lbs. **339.95**

Pecan-Stained Veneer Case.
AE-19, Shpg. wt. 9 lbs. **21.95**

Save up to 127.99



If purchased separately, up to $908.65 Heath Price **$780.66**

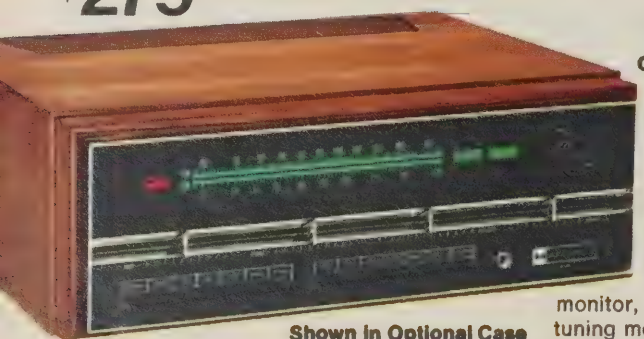
- *AR-29 AM/FM Stereo Receiver & Case*
- *Two Heathkit AS-1373 Speakers*
- *B•I•C 960 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/III Cartridge*

ARS-106, Shpg. wt. 184 lbs.
Exp./Frt. **780.66**
Please specify cartridge when ordering

AR-29 SPECIFICATIONS

AMPLIFIER — Frequency Response: −1 dB, 7 Hz to 60 kHz. **IM Distortion:** 0.2% at 35 W, 0.1% at 1 W. **Input Sensitivity:** Phono: 2.2 mV. Tape, Aux. and Tape Mon., 180 mV. **Hum and Noise:** Phono (10 mV ref.), −65 dB. Tape & Aux. (0.25 V ref.), −75 dB. — **FM Sensitivity:** 1.8 μV*. **Selectivity:** 70 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.5%*. **Spurious Rejection:** −90 dB*. **Antenna:** 75 or 300-ohm. **Channel Separation:** Typically 45 dB at mid-frequencies. **SCA Suppression:** 55 dB. — **AM SECTION — AM Antenna:** Adjustable rod. Connections for external ant., gnd. **Sensitivity:** External antenna, 20 μV at 1000 kHz for 20 dB S+N/N. **Selectivity:** 40 dB at 20 kHz. **Image Rejection:** 60 dB at 600 kHz*. 45 dB at 1400 kHz*. **Power Requirement:** 120/240 VAC 60/50 Hz. **Dimensions:** 5⅛" H x 16¾" W x 14½" D.
*Rated IHF (Institute of High Fidelity) Standards.

$279.95 The Top Performing Heathkit AR-1302 AM/FM Stereo Receiver



Shown in Optional Case

20 watts, minimum RMS, per channel into 8 ohms with less than 0.25% total harmonic distortion from 20-20,000 Hz

The AR-1302 is a quality stereo receiver with enough low-distortion power for most any listening area — so you don't pay for more power than you really need. Its features include: FM interstation mute, tape monitor, signal-strength and center-channel tuning meters, main/remote speaker switching, pushbutton function selectors and much more. The AM/FM tuner section has the kind of station-pulling performance you ordinarily find on more expensive receivers. And the AR-1302's elegant, functional styling adds a touch of quality to any decor. With black metal cabinet, order wood case below.

Kit AR-1302, Shpg. wt. 32 lbs. **279.95**

Pecan-Stained Veneer Case.
AE-19, Shpg. wt. 9 lbs. **21.95**

AR-1302 SPECIFICATIONS

IM Distortion: 0.25%. **FM Sensitivity:** 1.9 μV*. **Selectivity:** 60 dB*. **Capture Ratio:** 1.8 dB*. **AM Suppression:** 45 dB*. **Spurious Rejection:** −90 dB*. **Channel Separation:** 40 dB at mid-frequencies. **Antenna Inputs:** 75 or 300-ohm. — **AM SECTION — Antenna:** Adjustable rod. **Sensitivity:** Rod Antenna, 300 μV/M*. **Power Requirements:** 120/240 VAC 60/50 Hz. **Dimensions:** 5⅛" H x 16¾" W x 14½" D.
*Rated IHF (Institute of High Fidelity) Standards.

Save up to 116.49



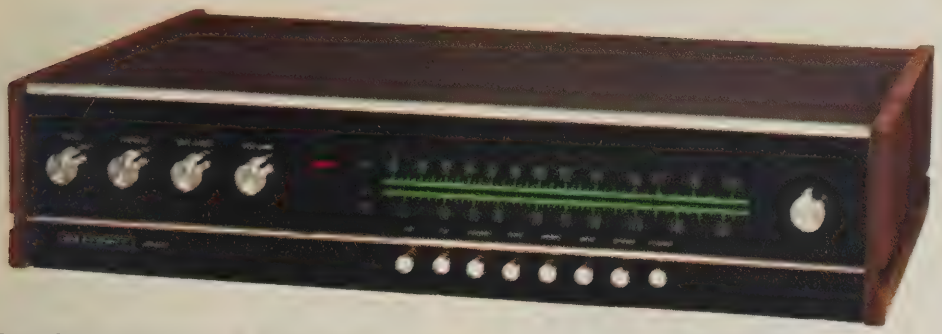
If purchased separately, up to $678.65 Heath Price **$562.16**

- *AR-1302 AM/FM Stereo Receiver & Case*
- *Two Heathkit AS-105W Speakers*
- *B•I•C 940 Automatic Turntable with Base and choice of Shure M91ED or Empire 2000E/III Cartridge*

ARS-105, Shpg. wt. 161 lbs. **562.16**
Please specify cartridge when ordering

Charge a kit — no money down on any kit — see page 50 for details.

Heathkit hi-fi is your "Better Buy"



Heathkit AR-1214 AM/FM Stereo Receiver—Affordable Hi-Fi

$199.95

15 watts, minimum RMS, per channel into 8 ohms with less than 0.5% total harmonic distortion from 20-20,000 Hz

Outstanding performance/price combination! Has power enough for good solid bass, even from inefficient speakers; an FM tuner with two integrated circuits and ceramic filters in the IF; advanced phase-lock-loop FM stereo circuit for enhanced separation with minimum distortion, and factory-assembled and aligned FM front end assures 2 μV sensitivity and excellent 2 dB capture ratio. Features include: tape monitor, pushbutton input selection, speaker on-off button and stereo headphone jack, easy and accurate flywheel tuning, inputs for 75 or 300 ohm antenna plus a swivel-mounted AM antenna. It's an easy to build kit too. The famous Heathkit manual makes it easy even for first-time kit builders. Stylish front panel and case with wood veneer end panels.

Kit AR-1214, Shpg. wt. 18 lbs. **199.95**

AR-1214 SPECIFICATIONS

AMPLIFIER — Frequency Response: ±1 dB, 7 Hz to 100 kHz. IM Distortion: less than 0.5%, full power; less than 0.2% at 1 watt. Hum and Noise: −65 dB. FM SECTION — Sensitivity: 2 μV*. Selectivity: 60 dB*. Image Rejection: 50 dB*. Stereo Separation: 40 dB typ., 35 dB minimum. — AM SECTION — Sensitivity: 100 μV per meter*. Selectivity: 40 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 17" W x 13" D.
*Rated IHF (Institute of High Fidelity) Standards.

Heathkit AR-2020 AM/FM 4-Channel Receiver



$269.95

15 watts, minimum RMS, per channel into 8 ohms with less than 0.5% total harmonic distortion from 20-20,000 Hz

The AR-2020 is a delight to build and operate! The low-distortion amplifier puts out plenty of power; the AM and FM tuner sections pull in stations far and near with outstanding clarity. Features a pre-assembled and aligned FM front end with ceramic IF filters for excellent amplifying and limiting characteristics. The built-in matrix decoder is optimized for SQ†, also has inputs for both stereo and discrete 4-channel aux. sources. Even has discrete 4-channel tape inputs and outputs. Case with handsome vinyl-clad top and walnut veneer end panels.

Kit AR-2020, Shpg. wt. 31 lbs. **269.95**

AR-2020 SPECIFICATIONS

AMPLIFIER — Frequency Response: ±1 dB, 7 Hz to 50 kHz. IM Distortion: less than .5% at full output; less than .25% at 1 watt. — FM SECTION — Sensitivity: 2 μV*. Selectivity: 60 dB*. Image Rejection: 50 dB*. Capture Ratio: 2 dB*. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 5" H x 20" W x 14" D.
*Rated IHF (Institute of High Fidelity) Standards.
†SQ is a registered trademark of CBS, Inc.

Our Lowest-Priced Heathkit Receiver

9 watts, minimum RMS, per channel into 8 ohms with less than 1.0% total harmonic distortion from 20-20,000 Hz

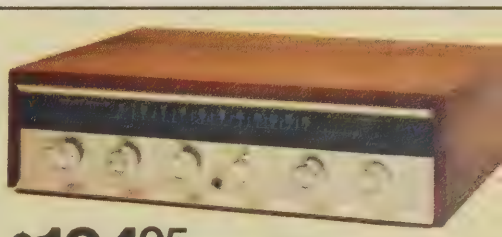
The AR-14 offers excellent performance for the money! Low-distortion amplifier, sensitive FM stereo tuner. Has magnetic phono input, tape inputs and outputs, dual volume, bass and treble controls, front panel headphone jack and stereo light. Less case, order below.

Kit AR-14, Shpg. wt. 18 lbs. **124.95**

AE-55, Walnut Veneer Case. 7 lbs. **13.95**
AE-65, Beige Metal Case. 6 lbs. **4.95**

AR-14 SPECIFICATIONS

AMPLIFIER — Frequency Response: ±1 dB, 12-60,000 Hz. IM Distortion: 1.0%. Hum and Noise: Phono, −60 dB. Aux., −63 dB. — FM SECTION — Sensitivity: (IHF): 5 μV*. Separation: 30 dB at 1 kHz. Harmonic Distortion: 1% or less. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 15¼" W x 12" D.



$124.95 **Shown in Optional Case**



Save up to 107.19

If purchased separately, up to $492.70

Heath Price $385.51

- *Heathkit AR-1214 AM/FM Stereo Receiver*
- *Two Heathkit AS-1042 Speakers*
- *B•I•C 940 Automatic Turntable with Base and Choice of Shure M91ED or Empire 200E/III Cartridge.*

ARS-104, Shpg. wt. 110 lbs.
Exp./Frt. **385.51**
Please specify cartridge when ordering



Save 40.79

If purchased separately, $362.65

Heath Price $321.86

- *Heathkit AR-1214 AM/FM Stereo Receiver*
- *Two Heathkit AS-106 Speakers*
- *Heath/BSR 510A/X Record Changer with Base, Dust Cover and Shure M75 ECS Cartridge*

ARS-103, Shpg. wt. 66 lbs.
Exp./Frt. **321.86**



Save 46.99

If purchased separately, $486.55

Heath Price $439.56

- *Heathkit AR-2020 4-Channel Receiver*
- *Four Heathkit AS-106 Speakers*
- *Heath/BSR 510A/X Record Changer with Base, Dust Cover and Shure M75 ECS Cartridge*

ARS-102, Shpg. wt. 108 lbs.
Exp./Frt. **439.56**

Heathkit performance specifications are guaranteed.

Buy a fine-sounding Heathkit Amplifier today...



$114.95

Our AA-1214 Stereo Amplifier gives you top performance at a price lower than you'd expect

POWER OUTPUT: 15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

Offers the same excellent performance as the amplifier section of our famous AR-1214 receiver. And the AA-1214 has a host of "top of the line features" for operating convenience and versatility. Input level controls match the amplifier to your phono cartridge's output; tape monitor lets you listen as you record (with 3-head decks), positive push-button input selection, front panel stereo headphone jack, bass and treble controls, and much more. The kit building is fun and easy too, with most parts mounted on two printed circuit boards and a wiring harness which eliminates most point-to-point connections. Stacks nicely with the matching AJ-1214 tuner, page 37. Case with walnut-stained veneer end panels.

Kit AA-1214, Shpg. wt. 13 lbs. **114.95**

AA-1214 SPECIFICATIONS

Frequency Response: ± 1 dB, 7 Hz to 100 kHz. IM Distortion: less than 0.5%. Hum and Noise: −65 dB.* Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 12¾" W x 12" D. *Rated IHF (Institute of High Fidelity) Standards



Shown in optional CASE

$189.95

AA-29 Stereo Amplifier

POWER OUTPUT: 35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS, WITH LESS THAN 0.25% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

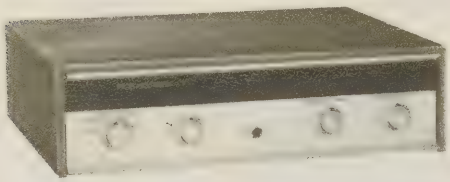
The amplifier section from our AR-29 receiver, for those who prefer the convenience of "separates". Has power enough for most speaker systems, complete input level controls including tape monitor, slide controls, pushbutton selectors including two for main or remote speakers. Has aux. and tuner inputs, front panel headphone jack. Easy kit assembly too. Compare specs, features with any amp in this price range and you'll build the AA-29. Metal cabinet, order case below.

Kit AA-29, Shpg. wt. 27 lbs. **189.95**

Oiled Pecan Veneer Case.
AE-19, Shpg. wt. 9 lbs. **21.95**

AA-29 SPECIFICATIONS

Frequency Response: ±1 dB, 7 Hz to 60 kHz. IM Distortion: 0.2% at full power; 0.1% at 1 watt. Hum and Noise: Phono, −65 dB. Tape & Aux., −70 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 5⅛" H x 16¾" W x 14½" D.



AA-14 Solid-State Stereo Amplifier $69.95

9 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 1% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

Offers surprising performance for an amplifier priced this low, and it's a fun to build kit project too. Features magnetic phono, tuner and aux. inputs, speaker on-off switch, front panel stereo headphone jack. Volume, bass and treble tone controls let you tune the AA-14 for best sound in your listening room. Order case below.

Kit AA-14, Shpg. wt. 11 lbs. **69.95**

Walnut Veneer Case.
AE-25, Shpg. wt. 5 lbs. **10.95**

Beige Metal Case.
AE-35, Shpg. wt. 4 lbs. **4.95**

AA-14 SPECIFICATIONS

Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3" H x 12" W x 10¼" D.



AA-18 Solid-State Mono Amplifier $24.95

3.25 WATTS, MINIMUM RMS, INTO 8 OHMS WITH LESS THAN 1.5% TOTAL HARMONIC DISTORTION FROM 40-20,000 HZ.

Music on a budget that's fun to build and fun to listen to. Use it anywhere for a roomful of monophonic sound. Inputs may be used for phono with ceramic cartridge, mono AM or FM tuner, or tape recorder. Drives efficient 8-ohm speakers to surprising sound levels... also can be used as a good headphone amplifier. Ideal beginner kit with open chassis layout, simplified PC board construction. Goes together in just a couple of evenings. With metal case.

Kit AA-18, Shpg. wt. 4 lbs. **24.95**

AA-18 SPECIFICATIONS

Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 2⅝" H x 7¹³⁄₁₆" W x 5⅜" D.

AA-2005A deluxe Stereo/ Quadraphonic Amplifier



$139.95

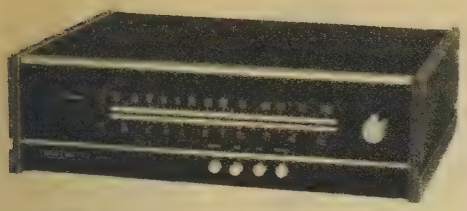
15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ.

Enjoy the spacious sound of 4-channel at a price lower than many comparable stereo amplifiers. The AA-2005A's built-in matrix decoder is optimized for SQ†-encoded records, tape and FM. And it has inputs for discrete 4-channel tuner, tape and aux. as well as outputs for a discrete tape recorder. Four level controls adjust the volume of each channel, and once the correct balance is established, a master volume control takes over. Has separate bass and treble controls for front and rear channels, front-panel jacks for stereo or 4-channel headphones. Luxurious champagne gold front panel accented by black vinyl-clad top and walnut veneer end panels.

Kit AA-2005A, Shpg. wt. 28 lbs. **139.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Add a matching stereo tuner when you're ready



$114.95

AJ-1214 AM/FM Stereo Tuner

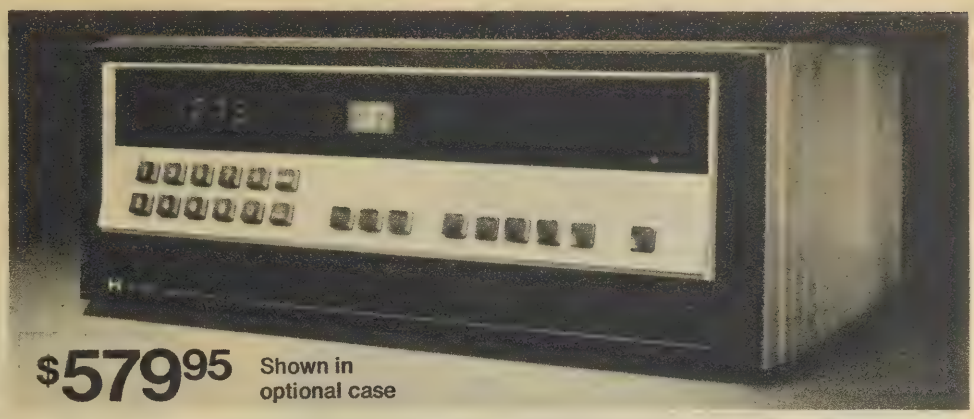
The perfect "system mate" for the AA-1214 amplifier. Has the same features and specs as the tuner section of our famous AR-1214 receiver. Pre-assembled and aligned FM front end provides 2 μV sensitivity with extremely low cross modulation and virtually no overload, even on strong signals. The FM IF uses two IC's and ceramic filters for over 60 dB selectivity. A phase-lock-loop multiplex circuit provides excellent stereo separation. Pushbutton band selection, flywheel tuning, inputs for 75 or 300-ohm antenna. Handsome vinyl clad metal case with walnut-stained veneer end panels.

Kit AJ-1214, Shpg. wt. 11 lbs. **114.95**

AJ-1214 SPECIFICATIONS

FM Sensitivity: 2μV*. Selectivity: 60 dB*. Image Rejection: 50 dB*. Capture Ratio: 2 dB*. AM Suppression: 50 dB*. Stereo Channel Separation: 40 dB typ., 35 dB min. AM Sensitivity: 100 μV per meter*. Selectivity: 40 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 3⅞" H x 17" W x 13" D.

*Rated IHF (Institute of High Fidelity Standards)



$579.95 Shown in optional case

Our best FM Stereo Tuner with advanced computer technology

Incorporates the most precise and accurate tuning system available today — digital readout and digital frequency synthesis — for an incredible 0.005% tuning accuracy that virtually eliminates interference as well as many other problems of conventional tuners. Features convenient three-way tuning — enter a station's frequency through the front panel keyboard; use the Auto-Sweep to count down from the top of the FM band and stop automatically at each listenable station, or program it to stop only at stereo stations; or use the A, B and C buttons to select any of three stations programmed with computer-type punch cards. We even supply extra cards so you'll have one for each of your favorite stations. Has multipath outputs for DC coupled scopes (like the AD-1013), adjustable AGC and squelch, much more. Truly one of the world's finest tuners. With metal cabinet, order case below.

Kit AJ-1510A, Shpg. wt. 25 lbs. **579.95**

Pecan Veneer Case.

AJA-1510-1, Shpg. wt. 8 lbs. **26.95**

AJ-1510 SPECIFICATIONS

MONOPHONIC: Tuning: Digitally synthesized. Antenna: 75 or 300 ohm. Sensitivity: Less than 1.8 μV. Selectivity (alternate channel):* Greater than 95 dB. Capture ratio: Less than 1.5 dB. Harmonic distortion:* Less than 90 dB. IF rejection:* Greater than 95 dB. Spurious rejection: Greater than 90 dB. Channel frequency accuracy: Better than .005%. STEREOPHONIC—Channel separation: 1,000 Hz, 40 dB; 80 Hz, 25 dB; 10 kHz, 25 dB; 15 kHz, 20 dB. Harmonic distortion:* 0.35%. AUDIO OUTPUT—Audio output level: (fixed): 1.2 V rms nominal (with 100% mod.). Output impedance: (fixed): Approx. 4,700 ohms. GENERAL—Power Requirement: 120/240 VAC, 60/50 Hz, 50 W. AC convenience outlet: Unswitched 350 W Max. Dimensions: 6" H x 16⅜" W x 14¾" D.

*Rated IHF (Institute of High Fidelity) Standards.



Save 40% Original Value to $384.65

Heath Price **$229.95**

- ***Heathkit AA-2005A 4-Channel Amplifier***
- ***Four Heathkit AS-1140 Speakers (See page 40)***
- ***Heath BSR AD-1135 Changer with Base, Dust Cover and Shure Cartridge (see page 44)***

AA-2005A SPECIFICATIONS

Frequency Response: ±1 dB, 7 Hz to 50 kHz. IM distortion: less than .5% full power, less than .25% at 1 watt. Hum and Noise: phono, —60 dB; tuner, aux., tape, —70 dB. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 4⅞" H x 19¾" W x 12" D.

†SQ is a trademark of CBS. Inc.



Shown in optional case

Our AJ-15 FM Stereo Tuner — the one that made the industry envious

The tuner section from our critically acclaimed AR-15 stereo receiver, the one that was the first to use integrated circuits, the first to use crystal filters, the first to have super specs. It's a top performing tuner with full controls, two tuning meters, front panel phone outputs, output level controls for each channel. Its excellent operation and performance make it a tuner you'll appreciate. With metal cabinet, order case below.

Kit AJ-15, Shpg. wt. 18 lbs. **259.95**

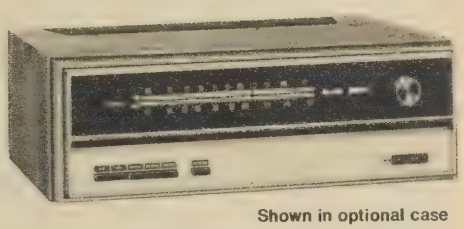
Walnut Veneer Case.

AE-18, Shpg. wt. 8 lbs. **21.95**

AJ-15 SPECIFICATIONS

Sensitivity: 1.8 μV*. Selectivity: 70 dB*. Image Rejection: 90dB*. IF Rejection: 30 dB*. Capture Ratio: 1.5 dB*. AM Suppression: 50 dB*. Harmonic Distortion: 0.5% or less*. Hum & Noise: 65 dB*. Spurious Rejection: 100 dB*. Channel Separation: 40 dB or greater at mid-frequencies. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 4¾" H x 16⅞" W x 12½" D.

*Rated IHF (Institute of High Fidelity Standards).



Shown in optional case

AJ-29 AM/FM Stereo Tuner — an outstanding price/performance combination

The tuner section of the AR-29 stereo receiver, styled and sized to match the AA-29 amplifier. Has pre-assembled FET FM front end with an integrated circuit multiplex, 3 IC's and a 9-pole filter in the IF for an ideally shaped bandpass with 70 dB selectivity for excellent adjacent channel rejection and no alignment problems. Wideband AM too. With metal cabinet, order case below.

Kit AJ-29, Shpg. wt. 19 lbs. **199.95**

Oiled Pecan Veneer Case.

AE-19, Shpg. wt. 9 lbs. **21.95**

AJ-29 SPECIFICATIONS

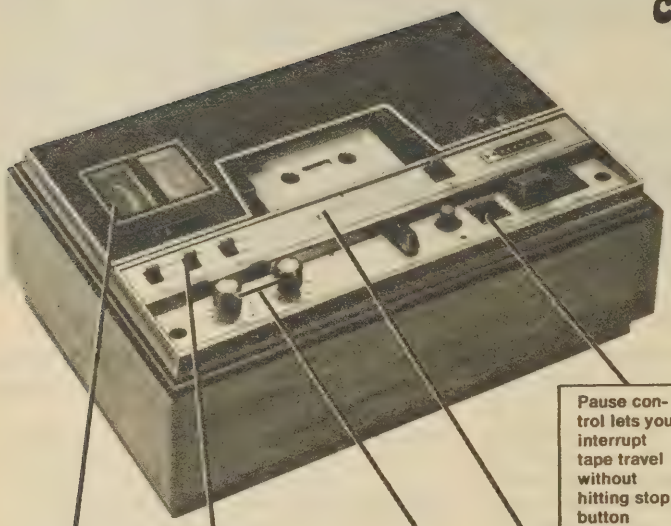
FM Sensitivity: 1.8 μV*. Selectivity*, 70 dB. Image Rejection, 90 dB*. Capture Ratio: 1.5 dB*. Harmonic Distortion: 0.5%*. Separation: 45 typ. at mid frequencies. AM Sensitivity: 20μV for 20 dB S + N/N*. Selectivity: 40 dB at 20 kHz.* Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 5⅛" H x 16¾" W x 14½" D.

*Rated IHF (Institute of High Fidelity Standards).

Better taping starts with a Heathkit Stereo



HEATH charg-a-kit REVOLVING CHARGE



Pause control lets you interrupt tape travel without hitting stop button

Rugged tape transport mechanism comes pre-assembled, ready to wire into kit

Lighted VU level meters double as alignment meters during assembly

Convenient, top-panel switch turns Dolby circuit on/off

Individual record level controls for perfect balance

We think that dollar for dollar, the AD-1530 is the best cassette deck you can buy. The guaranteed specifications clearly show that this deck is serious about quality and performance. It could be the best addition to your system you can make...and you can build it yourself.

Stereo cassette deck with Dolby®

$279.95 ***A quality combination of the famous Dolby noise reduction system and Heathkit do-it-yourself electronics***

The Heathkit AD-1530, in easy-to-assemble kit form, lets you enjoy the finest tape entertainment the cassette format has to offer — a performance-proven domestic tape transport, combined with the famous Dolby noise reduction system and Heath electronics. The famous tape transport comes preassembled, ready to wire into the kit. Has play, stop, fast-forward, rewind, and eject controls; safety interlock; automatic shutoff at end of tape in both "play" and "record" modes; piano-key control of play-record-stop; lever control of fast-forward, rewind, eject, stereo/mono input, Dolby on-off, selector for iron oxide or chromium dioxide tapes.

Other features include individual bias adjust controls for regular and CrO_2 tape; individual record level controls with separate VU meters; large three-digit resettable counter; input selector switch for microphone or high-level source input (any low impedance microphone with standard ¼" phone jack can be used); walnut-stained veneer base. Modular plug-in circuit board design in the amplifier and Dolby circuits simplify kit construction and servicing. Built-in test circuitry and free test cassette aid in checkout and adjustment. Blank 60 minute cassette included.

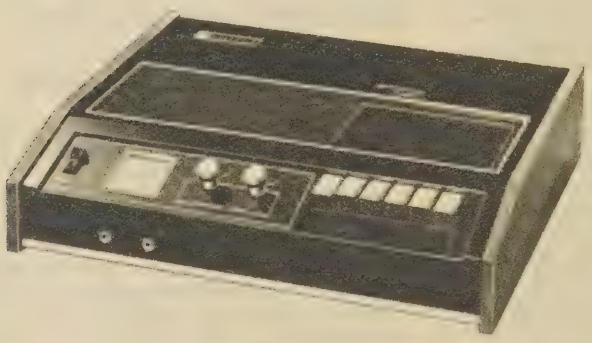
Kit AD-1530, Shpg. wt. 20 lbs. **279.95**

ADA-1530-1, Dust cover, Shpg. wt. 1 lb. **6.95**

AD-1530 SPECIFICATIONS

Frequency Response: Regular (iron oxide) tape; ±3 dB from 40 Hz to 12 kHz typical. CrO_2 (chromium dioxide) tape; ±3 dB from 40 Hz to 14 kHz typical. **Distortion:** Tape dependent; electronics less than 0.2%. **Hum and Noise:** Dolby Switch OFF, —48 Dolby Switch ON-Provides Additional Noise Reduction as Follows; —10 dB @ 4000 Hz and up. —9 dB @ 2400 Hz. —6 dB @ 1200 Hz. —3 dB @ 600 Hz. **Wow and Flutter:** Less than 0.25% rms. **Inputs: Microphone:** Lo-Z, 0.2 mV to 10 mV. **Auxiliary:** Hi-Z, 50 mV to 10V. **Bias Oscillator Frequency:** Approximately 100 kHz. **Tape Speed:** 1⅞" in/s or 4.76 cm/s. **Fast Forward/Rewind Time:** Approximately 45 sec. for C-60 cassette. **Solid-State Devices:** 37 transistors and 2 JFET's. **Output:** Greater than 0.5 volts from low impedance source. **Dimensions:** 5½" H x 9½" D x 14" W. **Power Requirements:** 120 volts, 60 Hz, 15 W. **Dolby is a Trademark of Dolby labs.**

Superb taping quality and performance...on a budget



AD-110 SPECIFICATIONS

Frequency Response (record-play): ±3 dB from 30 Hz to 12 kHz typical. **Inputs:** Aux. 70 mV to 10 V. Mike 0.2-6 mV. **Hum and Noise:** —45 dB. **Bias and Erase Frequency:** 110 kHz. **Wow and Flutter:** Less than .25% WRMS record and playback. **Motor:** Solid-state regulated DC. **Speed:** 1⅞ ips. **Fast Forward-Rewind Time:** Less than 120 sec. for C-60 cassette. **Tape:** C-30, C-60, C-90 cassettes. **Control:** Power switch, record level (left and right channel), record, rewind, stop-eject, play, fast forward, pause. **Transistor Complement:** 13 transistors and 1 IC. **Output:** Greater than ½ volt from low impedance amplifier stage. **Finish:** Walnut-stained veneer end panels. **Dimensions (over-all):** 3⅛" H x 13⅝" L x 11" D. **Power:** 120/240 VAC, 60/50 Hz, 7 watts.

Stereo cassette tape recorder/player

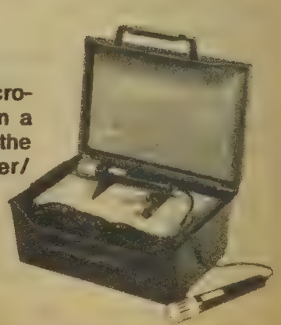
Record and play stereo or mono cassettes through your present hi-fi system. It's easy with the AD-110. Features include an internally adjustable bias to optimize the AD-110 for chromium dioxide or standard tapes; two-transistor regulated DC motor for stable tape speed with minimum wow and flutter; six pushbuttons for control of all tape transport functions; separate level controls and meters for high-level inputs from less than 100 mV to 10V; preassembled and aligned transport mechanism for simplified assembly. Blank 60-minute cassette included with kit. Stereo microphones optional.

Kit AD-110, Shpg. wt. 12 lbs. **154.95**

Matched Dynamic Microphones

High-quality, low-priced dynamic microphones get your material on tape, on a budget. Especially suited for use with the Heathkit AD-110 Stereo Tape Player/Recorder. Includes two mikes, connector cables and rugged, padded carrying case.

ADA-110-1,
Shpg. wt. 2 lbs. **22.95**



Charge a kit — no money down on any kit — see page 50 for details.

Tape Deck and Heathkit Mixer



Heathkit Stereo Mike Mixer console

$129.95 ***The Heathkit TM-1626 is an absolute must for your own quality taping system.***

The wide response (40-2000 Hz, ±1 dB) and low distortion (0.5%) of the solid-state TM-1626 will give you clean, life-like mixing capability. Each of the two outputs has its own master level control and meter and they can be switched for use in stereo or mono. The six inputs include two high-level auxiliary inputs for disc or tape sources, and four mike inputs which are switchable to high impedance or balanced or unbalanced low impedance, for use with any type of microphone. The fourth microphone input has a "pan" control to adjust its apparent location from left to right or anywhere in between. All six inputs can be individually switched to left, off, or right channel. Access to "Mix-Bus" permits paralleling added mixers for extra inputs and outputs.

A pair of backlighted meters with two switch-selected ranges plus a pair of LED's with adjustable threshold show instantaneous peaks faster than any meter. Handsome cabinet in black with walnut stained veneer end panels. Build this quality mixer into your recording system now.

Kit TM-1626, Shpg. wt. 12 lbs. **129.95**

TM-1626 SPECIFICATIONS

Frequency Response: 40-20,000 Hz, ±1 dB. **Distortion:** 0.5% maximum at outputs from 50 mV to 6.5 volts. **Hum:** –80 dB at minimum volume. **Hum & Noise:** –60 dBV from 300-20,000 Hz, –50 dB from 20-20,000 Hz, all controls set at maximum. **Minimum Input Overload:** Mike – 60 mV (low-Z), 900 mV (high-Z). Auxiliary – 3.0 V. Mixer Bus – 200 mV. **Input Impedance:** Mike – 1100 ohms (low-Z), 170k ohms (high-Z). Auxiliary: 100k ohms. Mixer Bus: 3000 ohms. **Output Impedance:** 150 ohms. **LED Peak Detectors:** adjustable from 80 mV to 6.5 volts output. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts maximum. **Dimensions:** 5¾6" H x 16" W x 9⅞" D.

Fully-Assembled Heath Stereo Equipment Cabinets

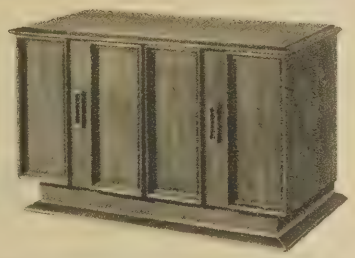


Mediterranean cabinet of hardwood solids & veneers, hand-rubbed dark oak finish.

AE-1077, Shpg. wt. 142 lbs. Exp./Frt. **259.95**

AE-101-3, slide shelf accessory, Shpg. wt. 9 lbs. **24.95**

DIMENSIONS: 29" H x 48½" W x 23" D. TOP COMPARTMENT: 8½" H x 43½" W x 19½" D. BOTTOM COMPARTMENTS (EACH): 13¾" H x 21⅜" W x 19½" D (two removable shelves provided, adjust height in 2" increments). SLIDE SHELF ACCESSORY: 15⅜" W x 14" D.



Contemporary cabinet of hardwood solids & veneers. Oiled walnut stain finish.

AE-1067, Shpg. wt. 132 lbs. Exp./Frt. **229.95**

AEA-101-3, slide shelf accessory, Shpg. wt. 9 lbs. **24.95**

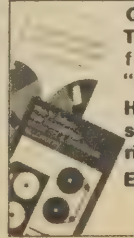
DIMENSIONS: 28⅜" H x 46 13/16" W x 22¾" D. TOP COMPARTMENT: 7" H x 42¾" W x 19⅜" D. BOTTOM COMPARTMENTS (EACH): 13¾" H x 21¾" W x 19⅜" D (two removable shelves provided, adjust height in 2" increments). SLIDE SHELF ACCESSORY: 15⅜" W x 14" D.



This luxurious Mediterranean equipment cabinet houses your entire stereo system...including the speakers. One-piece, 5½-ft. credenza crafted in hickory veneers with solid oak trim and finished in pecan stain. Adjustable shelf holds your tuner, amplifier or receiver. Below, there's room for a turntable and record storage. Built-in ducted port speaker enclosures have precut 12" openings.

AE-101, credenza, Shpg. wt. 193 lbs. Exp./Frt. **259.95**

CABINET OVERALL: 26⅞" H x 66" W x 19¼" D. SHELF COMPARTMENT: overall, 35⅞" W x 17½" D (shelf 15" D), adjustable shelf height: 5½", 6½", 7½", 8½". LOWER COMPARTMENT: 35⅞" W x 17½" D x 12¼" H min. (with shelf at 8½"). SPEAKER CABINET VOLUME: 2.3 cu. ft. CHANGER BASE: 5½" H x 18½" W x 14" D.



Questions & Answers About Tape Recording—everything from "accessories" to "weak sound." **EDP-107 5.95**

How to Select/Use/Troubleshoot Cassette and Cartridge Recorders.

EDP-195 ..... **4.55**

See page 48 for book-ordering information.

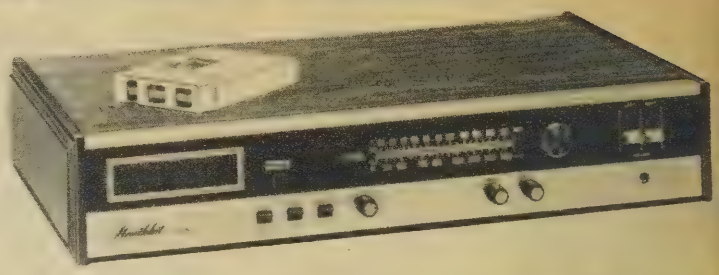
Here's Low-Cost Stereo and 4-Channel



Big-Sound Stereo for Bargain Hunters

$139.95 The Heathkit AC-1118 AM/FM Stereo Receiver offers 5 μV sensitivity for superior reception, 60 dB selectivity to block out adjacent stations, automatic frequency control (AFC), and integrated circuits in the FM IF to assure clean, quiet audio. Features include: Direct-coupled amplifier, inputs for ceramic cartridge changer and stereo tape player. Handsome walnut-grained vinyl-clad plastic and metal enclosure. Five circuit boards hold most of the parts and just a few simple adjustments bring it to its rated performance.

Kit AC-1118, Shpg. wt. 15 lbs. **139.95**
Kit AS-1140, Pair of speakers, Shpg. wt. 15 lbs. **37.95**
ACP-1138, Changer with ceramic cartridge, Shpg. wt. 15 lbs. **44.95**



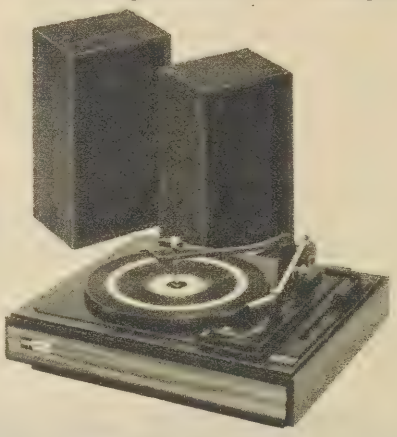
$179.95 AM/FM/8-Track Stereo Receiver

Fully preassembled AM/FM front end for sensitive reception; ceramic filters for excellent selectivity; automatic frequency control; integrated circuit FM IF strip; phase-locked-loop integrated circuit multiplex demodulator; stereo headphone jack; complete controls; and handsome cabinet. Built-in 8-track stereo tape player. And it's all factory assembled and aligned, even the pre-amps are built...just drop it into place and connect the input and output. Full featured, too, with automatic or manual program change, and lighted program indicators.

Kit AC-1120, Shpg. wt. 22 lbs. **179.95**
Kit AS-1140, Pair of speakers, Shpg. wt. 15 lbs. **37.95**
ACP-1138, Changer with ceramic cartridge, Shpg. wt. 15 lbs. **44.95**

Order with speakers, or with speakers and changer, and save 5%.

Components to Complement Your Economy System



High Efficiency Speakers

Efficient infinite baffle design for 2 to 10 watt amplifiers. Each has a 4½" foam suspension speaker with 3 oz. ceramic magnet. Useful response, 70-16,000 Hz, flat from 100-10,000 Hz ±5 dB. Walnut-grain, vinyl-clad enclosure measures 12" H x 7" W x 6" D. Impedance is 8 ohms.

Kit AS-1140, Shpg. wt. 15 lbs. **37.95**

Ceramic Cartridge Changer

3-speed automatic changer, molded vinyl base, dustcover, 45-rpm adaptor, low-mass tone arm, ceramic cartridge with diamond stylus, all cables. 7¼" H x 15¼" W x 14⅛" D.

ACP-1138, Shpg. wt. 15 lbs. **44.95**

These specifications apply to all components on this page.

POWER OUTPUT: 4.5 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS AT LESS THAN 1.0% TOTAL HARMONIC DISTORTION FROM 50-15,000 HZ.

AMPLIFIER — Frequency Response: 30-15,000 Hz, ±3 dB. Input Senstivity: ceramic phono, 140 mV; high level inputs, 120 mV. Hum & Noise: —60 dB. FM Sensitivity*: 5 μV. Selectivity*: 60 dB. Harmonic Distortion*: 1%. Hum & Noise: —55 dB. Stereo Channel Separation: 35 dB. FM Antenna: 300-ohm, external. AM — Sensitivity: 300 μV/m for 20 dB S+N/N. Selectivity: 40 dB, alternate channel. Hum & Noise: —35 dB. TAPE PLAYER — Motor: Synchronous. Frequency Response: 50-10,000 Hz, +3, —5 dB. Separation: 30 dB at 1 kHz. Harmonic Distortion: 3% at 1 kHz S.R.L., max. Hum & Noise: —40 dB. Wow & Flutter: less than 0.3%. GENERAL — Power Requirement:120/240 VAC, 60/50 Hz. Dimensions: All units are 4" high and 15" deep; units with 8-track players are 22" wide, others are 17" wide. Cases: walnut-grained, vinyl clad metal and plastic.

*Rated IHF (Institute of High Fidelity) standards.



$199.95 AM/FM/8-Track 4-Channel Receiver

4-channels of featured performance. Preassembled sensitive combination AM/FM front end; ceramic filters; automatic frequency control; ICs in the FM IF section; phase-locked-loop IC multiplex demodulator; and headphone jacks for stereo or 4-channel. The 4-channel amplifier will function as 4 discrete channels, or built-in SQ* decoder may decode maxtrixed 4-channel records or broadcasts.

4-channel 8-track tape player, all preassembled and aligned, is fully compatible with 4-channel or stereo tapes.

Kit AC-1122, Shpg. wt. 25 lbs. ..... **Was 239.95 NOW 199.95**
Kit AS-1140, Pair of speakers, Shpg. wt. 15 lbs. **37.95**
ACP-1138, Changer with ceramic cartridge, Shpg. wt. 15 lbs. **44.95**



$99.95 8-Track 4-Channel Tape Player/Amplifier

Direct-coupled 4-channel amplifier. Use it as 4 discrete channels, or switch in its self-contained SQ* decoder to enjoy matrixed 4-channel material or enhance your stereo tapes and records. Two extra sets of inputs accept ceramic cartridge changer and any high-level stereo or 4-channel source. Cabinet is included.

4-channel 8-track tape player, preassembled and aligned, ready to connect, accepts 4-channel or stereo tapes with auto-switching.

Kit AT-1124, Shpg. wt. 21 lbs. ..... **Was 169.95 NOW 99.95**
Kit AS-1140, Pair of speakers, Shpg. wt. 15 lbs. **37.95**
ACP-1138, Changer with ceramic cartridge, Shpg. wt. 15 lbs. **44.95**

Order with speakers, or with speakers and changer, and save 5%.

*SQ is a trademark of CBS, Inc.

Charge a kit — no money down on any kit — see page 50 for details.

An exciting new 3-way speaker value



$149.95 EACH

Heathkit AS-1373 rivals the performance of speakers costing much, much more

Here's a superb, build-it-yourself addition to our speaker line... with guaranteed specifications you won't find on comparably priced speakers. The 10″ woofer provides solid, well-defined bass. And the woofer-to-midrange crossover frequency is 500 Hz to minimize intermodulation distortion and insure smoothness. The natural-sounding midrange is due in large part to two design features normally found only in speakers costing over $300. First, a special subenclosure isolates the 4½″ midrange speaker from distortion caused by woofer vibrations (most bookshelf systems use a less effective plastic back behind the midrange cone). Second, the subenclosure is filled with a polyester damping material which prevents reflections — a primary cause of midrange coloration. The 1″ dome tweeter is one of the finest made — excellent power handling and superb definition. Even at 12,000 Hz its horizontal dispersion is 120°!

Innovative design makes it an even better speaker. Poor imaging (a constantly-shifting blur of sound) is a common problem in bookshelf speakers. To create a sharply focused sound "image", all three of the AS-1373's drivers are flush-mounted. And there are no "rails" around the edges of the cabinet to limit treble dispersion or cause peaks and dips in tweeter response. For optimum imaging, the tweeter should be located directly above the midrange. The AS-1373 is the only speaker that permits this whether you position the system horizontally or vertically — simply interchange the positions of the tweeter and switch plate. Finally, the handsome foam grille contributes to superior imaging because it is more acoustically transparent than ordinary grille cloth — especially at high frequencies.

The AS-1373 is a great combination of efficiency and power handling characteristics. Although it can be driven by as little as 10 watts, it's rated at 200 watts max. (the woofer can withstand up to 400 watts of pulse power). So, while the AS-1373 can be used with almost any amplifier, a high-power amplifier like the AA-1640 reveals its awesome dynamic range. And the AS-1373 is the only bookshelf system which provides maximum protection by individually fusing each driver, virtually eliminating expensive burn outs. The sophisticated crossover circuit (a weak link in many systems) is every bit as rugged as the drivers. Two subtle but effective controls match the mid- and high-frequency response to your room's acoustics. Shpg. wt. 62 lbs.

Kit AS-1373, Exp./Frt. . . . . **each 149.95**

AS-1373 SPECIFICATIONS

Frequency Response: ±3 dB from 40 Hz to 20,000 Hz, in a typical listening room; −10 dB at 30 Hz and 22k Hz. **Impedance:** 8 ohms, nominal; 6 ohms, minimum. **Recommended Amplifier Power:** 10 watts minimum; 200 watts, maximum (fused for larger amps). **Crossover Frequencies:** 500 Hz and 3000 Hz, 12 dB/octave. **Controls:** 3 kHz shelf/flat; 10 kHz rolloff/flat. **Fuses:** Woofer, 1¼A slow-blow; midrange, ¾A slow-blow; tweeter, ½A regular. **WOOFER Diameter:** 10″, nominal. **Magnet Weight:** 2 lbs. **Power Handling:** 400 watts, pulse (if not excursion limited); 40 watts continuous. **MID-RANGE Diameter:** 4½″, nominal. **Magnet Weight:** 10 ounces. **Power Handling:** 250 watts, pulse; 25 watts continuous. **TWEETER Diameter:** 1″ dome. **Magnet Weight:** 8 ounces. **Power Handling:** 140 watts, pulse; 14 watts continuous. **ENCLOSURE Size:** 26″ H x 14½″ W x 11⅞″ D, without 1¼″ grille. **Net Weight:** 47 lbs.

New high-performance headphones...for stereo enjoyment on a budget



New Koss High Velocity Stereophone with Decilite™ driver elements

AHP-1168, Shpg. wt. 2 lbs. Assembled **44.95**

AHP-1168 SPECIFICATIONS

Frequency Response: 15-20,000 Hz. **Total Harmonic Distortion:** Less than 0.5%. **Source Impedance:** 3.2-600 ohm. **Cord:** Coiled, 10′ extended. **Weight:** 9.3 oz., less cord.



New Koss High Velocity Stereophone with individual gain controls

AHP-1169, Shpg. wt. 3 lbs. Assembled. **54.95**

AHP-1169 SPECIFICATIONS

Frequency Response: 10-20,000 Hz. **Total Harmonic Distortion:** Less than 1.0%. **Source Impedance:** 3.2-600 ohm. **Cord:** Coiled, 10′ extended. **Weight:** 24 oz., less cord.



New Sennheiser Stereo Headphones with patented Open-Air Design

AHP-1193, Shpg. wt. 2 lbs. Assembled. . . **64.95**

AHP-1193 SPECIFICATIONS

Frequency Response: 15-20,000 Hz. **Total Harmonic Distortion:** Less than 1.0%. **Impedance:** 2,000 ohms per channel — can be connected directly to either hi or lo impedance outputs. **Weight:** 6.5 oz., less cord. **Cord:** 10′ extended.



Stereo Headphone Control Unit

Box on 20-foot cable provides jacks for two sets of headphones, volume control and speaker on/off switch. A great kit for first-time builders.

Kit AC-17, Shpg. wt. 3 lbs. **14.95**

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit Speaker Systems make the most



1 $47.95 EACH 2 $57.95 EACH 3 $109.95 EACH 4 $219.95 EACH 5 $239.95 EACH

Heathkit Bookshelf Speaker Systems put the sound where you want it — and they look great too, with factory assembled and finished cabinets

1 This 2-way system handles 10-50 watts for medium-power amplifiers and receivers

Good sound on a low budget. A high compliance, long throw 8" woofer and 3½" shallow cone/dome tweeter deliver response from 40 to 18,000 Hz. The cross-over system operates at 1500 Hz to distribute frequencies evenly for smooth overall response. System resonance at 65 Hz. A rear panel level control contours high frequency response to your listening room. The woofer has an 8.5-oz. magnet. The tweeter uses a 1.3-oz. magnet. Ten watts is all that's needed to power the AS-1042, yet it can handle up to 50 watts. Impedance is 8 ohms nominal, 6 ohms minimum. Cabinet comes fully assembled and covered with handsome walnut-toned vinyl. 19"H x 10"W x 8¼"D.

Kit AS-1042, Shpg. wt. 27 lbs. ..... **each 47.95**

2 High efficiency 2-way system ideal for "budget" music systems

Designed for use with low power amplifiers. It can be driven by as little as 5 watts yet can handle up to 25 watts. The system uses an exponential rectangular horn tweeter and an 8-inch woofer in a vented bass-reflex enclosure. A level control knob for the tweeter is mounted on the rear panel. Magnets are 10 ounces for the woofer and 1.47 ounces on the tweeter. Frequency response is 70 to 15,000 Hz with crossover at 3,500 Hz. 8-ohm nominal impedance. The walnut toned vinyl-clad cabinet comes fully assembled. 21½" H x 12" W x 10½" D.

Kit AS-1039, Shpg. wt. 36 lbs. ..... **each 57.95**

3 High performance 3-way system with midrange speaker for added presence

The Heathkit AS-104 has the 100 watt power-handling capacity and features of the AS-105 but adds a low resonance, high compliance 4½-in. midrange speaker in a sealed and acoustically lined sub-enclosure. 8 ohm impedance. RLC crossover at 500 Hz and 4500 Hz. Individual mid-frequency and high-frequency controls are provided to allow "tailoring" the AS-104's frequency response so it sounds its best in any listening area. The assembled oiled walnut veneer cabinet has a removable front grille for easy access to speaker elements. Dimensions are 24" H x 13½" W x 11½" D.

Kit AS-104, Shpg. wt. 54 lbs., Express/Frt. ..... **each 109.95**

4 Heathkit/AR combine for super sound

The speaker that can show how good the rest of your system is. It delivers clean, natural response with extremely low distortion from 30 Hz to 20,000 Hz. Three Acoustic Research AR-3A drivers are mounted in an oiled walnut veneer enclosure. The 12-in. acoustic suspension woofer provides solid bass down to 30 Hz. The special hemispherical dome midrange and tweeter, combined with a precisely-engineered crossover network, deliver natural transparent sound. Individual midrange and tweeter level controls allow you to tailor the sound to the listening area. Requires min. 25 W rms. 25" H x 14" W x 11¾" D.

Kit AS-103A, Shpg. wt. 64 lbs., Express/Frt. ..... **each 219.95**

5 Heathkit/JBL ultra-efficient system

Handles up to 50 watts, yet it's so efficient it can be driven by almost any low power amplifier. Frequency response is smooth from 40 Hz to 20 kHz. The 14-in. woofer uses an inert, self damping cone suspension and 11½-lb. magnet for clear, full bass. The JBL 2-in. direct radiator produces sharp, lifelike highs. System impedance is 8 ohms. The crossover network operates at 2000 Hz and is not affected by the 3-position high-frequency level control. The damped reflex enclosure is factory assembled from oak veneer and furniture grade hardwoods. Measures 14" H x 23½" W x 12" D.

Kit AS-48, Shpg. wt. 57 lbs. ..... **Was 249.95, Now 239.95**



Helpful hints for the audiophile

How to Wire Hi-Fi Extension Speakers — includes instructions, schematics & photos for installing systems to meet specific needs.

EDP-103, ... **3.95**

Acoustic Techniques for Home & Studio — covers listening room design & what test equipment to use in determining acoustic performance; for hi-fi buff & professional.

EDP-111, ... **5.95**

Hi-Fi Loudspeakers and Enclosure — design, construction, placement.

EDP-192, ... **6.85**

See page 48 for book-ordering information

Save 5% with Heath hi-fi discount — see page 45.

of your audio dollar

Big-sound systems at surprisingly low prices



6

$339.95 EACH

6 Incomparable Heath/Altec-Lansing Sound

Combines Heathkit engineering with Altec-Lansing speakers for real audio excellence. The AS-101 is a bass reflex design with a high compliance 15-in. woofer. The woofer has a 10½-lb. magnet with a 3-in. edge-wound copper ribbon voice coil. The mid and high-frequency sectoral horn's driver uses a 13-oz. magnet and 1¾-in. voice coil. The AS-101 can be driven with as little as 10 watts, and will handle up to 50 watts. Impedance is 8 ohms. The two-way crossover system operates at 800 Hz and is compatible with biamplification. The high frequency level control allows balancing output to your taste. The factory assembled cabinet features pecan veneers, hardwood trim and gold and black grille cloth. 29⅝" H x 27¾" W x 19⅞" D.

Kit AS-101, Shpg. wt. 128 lbs. ..... **each 339.95**

HEATH charg-a-kit REVOLVING CHARGE



7



8

7 Our lowest-priced acoustic suspension speaker system

Clean, well-balanced sound, the kind you'd expect from larger, more expensive speakers. A high-compliance 4½" speaker provides useful response from 70 Hz to 16 kHz. The factory-assembled walnut veneer enclosure measures just 12" H x 7" W x 6" D. For use with 4 to 20-watt amplifiers. 8 ohms. Build a pair in just an evening for stereo sound you appreciate and enjoy for years.

Kit AS-106, Shpg. wt. 10 lbs. ..... **each 26.95**

Kit AS-106-2, Shpg. wt. 25 lbs. ..... **53.90 pair**

8 Great little 2-way bookshelf system

Superb sound with almost any amplifier with 10 to 100 watts per channel. Useful response from 30 Hz to 18 kHz with extremely low distortion below 50 Hz. Factory-assembled walnut-veneer enclosure houses 10" high-compliance woofer and 3½" cone/dome tweeter. A high-frequency level control lets you "tune" the sound to your listening area. 24" H x 13½" W x 11½" D. 8 ohms.

Kit AS-105W, Shpg. wt. 52 lbs. ..... **each 89.95**

Design your own sound system with Heath Separate Speakers

12" Two-way High Compliance...woofer with re-entrant horn tweeter; high frequency level control; 1-yr. guarantee.

Model AS-183, Shpg. wt. 15 lbs. **69.95**
Pair (AS-183-2), Shpg. wt. 39 lbs. **133.00**

AS-183 SPECIFICATIONS — Impedance: 8 ohms. Power Rating: 30 watts. Frequency Response: 20-15,000 Hz. Cone Resonance: 25 Hz. Magnet Weights: 1¾ lbs., 4.65 oz. Voice Coil Sizes: 1½" and 1".



12" Three-way Coaxial...woofer, midrange cone & special design horn tweeter; handles up to 20 W; electrical & mechanical crossovers; high frequency level control; 1-yr. guarantee.

Model AS-163, Shpg. wt. 12 lbs. **44.95**
Pair (AS-163-2), Shpg. wt. 32 lbs. **85.00**

AS-163 SPECIFICATIONS — Impedance: 8 ohms. Frequency Response: 40-15,000 Hz. Cone Resonance: 60 Hz. Magnet Weights: 13 oz., 1 oz. Voice Coil Sizes: 1½" and 1".



8" Two-way Coaxial...separate woofer & tweeter; 50-14,000 Hz response; handles up to 12 W; high frequency level control; 1-yr. guarantee.

Model AS-133, Shpg. wt. 6 lbs. **24.95**
Pair (AS-133-2), Shpg. wt. 18 lbs. **47.00**

AS-133 SPECIFICATIONS — Impedance: 8 ohms. Cone Resonance: 70 Hz. Magnet Weights: 10 oz., 0.68 oz. Voice Coil Sizes: 1" and ⅜".



12" three-way with 80-watt capacity

12" Three-way High Compliance... unitary speaker with woofer, compression mid-range & horn-loaded compression super tweeter; 80 W peak power capability; 600 & 4000 Hz crossovers; mid & high frequency level control; 1-yr. guarantee.

Model AS-27, Shpg. wt. 15 lbs. **89.95**
Pair (AS-27-2), Sh. wt. 33 lbs. **170.00**

AS-27 SPECIFICATIONS — Impedance: 8 ohms. Frequency Response: 20-20,000 Hz. Cone Resonance: 30 Hz. Magnet Weights: 1 lb., 6.4 oz., 4.6 oz. Voice Coil Sizes: 1½" and 1".



$89.95

8" Dual Cone Speaker. Only 3½" deep; 50-12,000 Hz response; handles up to 12 W; 1-yr. guarantee.

Model AS-123,
Shpg. wt. 5 lbs. ..... **Was 12.95, Now 9.95**

Pair (AS-123-2),
Shpg. wt. 15 lbs. ..... **Was 24.00, Now 18.00**

AS-123 SPECIFICATIONS — Impedance: 8 ohms. Cone Resonance: 70 Hz. Magnet Weight: 10 oz. Voice Coil Size: 1".



Charge a kit — no money down on any kit — see page 50 for details.

Order one of these Heath-recommended



SAVE UP TO $86.90

$199.95 With Base and Cartridge

If purchased separately, up to $286.85

1 B·I·C 980 with electronic rpm control

Direct belt drive and electronic speed control give you the performance and reliability of studio-quality turntables. The unique "programming panel" gives you the convenience of a changer. Permits automatic play of a single disc once or up to six times, or plays a six record stack. Has 24-pole synchronous motor, pitch control, strobe, 33⅓ and 45 rpm operation. Includes base, specify Shure M91ED or Empire 2000/III cartridge. For premium performance, add $35 and select Shure V-15 Type III or Audio-Technica AT-14S. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1167, Shpg. wt. 13 lbs. **199.95**



SAVE UP TO $86.90

$159.95 With Base and Cartridge

If purchased separately, up to $246.85

2 B·I·C 960 belt-drive automatic turntable

The same ultra-reliable design found on the B·I·C 980 minus the electronic speed control, adjustable pitch and strobe light. The 960 has the trouble-free operation only a true belt-drive turntable can provide, coupled with B·I·C's unique "programming panel" that lets you repeat a record up to six times, or play six records in a stack. Offers 33⅓ and 45 rpm operation. Includes base and your choice of Shure M91ED or Empire 2000E/111 cartridge at no additional cost. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1166, Shpg. wt. 12 lbs. **159.95**



SAVE UP TO $86.90

$109.95 With Base and Cartridge

If purchased separately, up to $196.85

3 B·I·C 940 budget-priced belt-drive

A true B·I·C automatic turntable — with belt drive, low speed 24-pole synchronous motor, up to six record continuous play. Extremely low-friction bearings and an isolated counterweight allow the tonearm to track even the highest quality cartridges. Has viscous-damped cueing, full-size 12" platter, 33⅓ and 45 rpm operation, and CD-4 capability. Price includes base and your choice of Shure M91ED or Empire 2000E/111 cartridge. Specify cartridge with order. 15⅞" W x 12 11/16" D x 4 15/16" above mounting board, 1⅝" below.

ACP-1161, Shpg. wt. 11 lbs. **109.95**

HEATHKIT® BSR®



SAVE UP TO $23.85

$84.95 With Base, Dust Cover, and Cartridge

If purchased separately, up to $108.80

ACCESSORIES FOR ALL B·I·C TURNTABLES

ADP-1163, Solid oiled walnut base, Shpg. wt. 4 lbs. **16.95**

ADP-1164, Hinged dustcover, Shpg. wt. 4 lbs. **9.95**

ADP-1165, 45-rpm spindle, Shpg. wt. 1 lb. **3.95**

4 The Heath/BSR 510A/X Changer System

Great for budget systems. The low-mass tonearm features micrometer tracking force adjustment, viscous-damped cueing. Synchronous motor provides 33⅓, 45 and 78-rpm operation. Includes auto and manual spindle, base, dustcover and factory-mounted Shure M75-ECS magnetic cartridge with elliptical stylus. 15¼" W x 14⅛" D, including base and dustcover.

AD-1135, Shpg. wt. 15 lbs. **84.95**

AD-1037, optional 45 rpm spindle, Shpg. wt. 1 lb. **1.95**

NOTE: When ordering turntable, please specify cartridge and base model numbers on order blank.

5



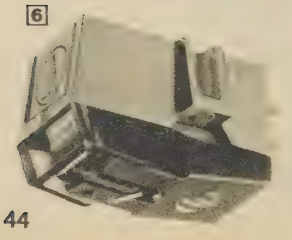
5 Shure V-15 Type III Stereo Cartridge

Famous for its excellent tracking ability and smooth, uncolored sound. For tonearms capable of tracking at ¾ to 1¼ grams. See specs at right.

AD-1059, Shpg. wt. 1 lb. **72.50**

With turntable purchase **35.00**

6



6 Audio-Technica AT-14S Cartridge

Features specially shaped and polished Shibata stylus for unparalleled quadraphonic CD-4 and stereo response. Stylus lasts twice as long as ellipticals! Specs at right.

ADP-1139, Shpg. wt. 1 lb. **69.95**

With turntable purchase **35.00**

Heath-Approved High-Performance Cartridges

Model	Frequency Response (Hz)	Output	Separation	Elliptical Stylus	Tracking	Price	
						Separately	With Turntable
ADP-1062, Wt. 1 lb. Shure M91 ED	20-20,000	5.0 mV	25 dB	0.2 x 0.7	¾ to 1½ gr.	54.95	FREE
ADP-1147, Wt. 1 lb. Empire 2000E/111	5-35,000	5.0 mV	35 dB	0.2 x 0.7	½ to 1½ gr.	69.95	FREE
AD-1059 Shure V-15 Type III	10-25,000	3.5 mV	28 dB	0.2 x 0.7	¾ to 1¼ gr.	72.50	35.00
ADP-1139 Audio-Technica AT-14S	5-45,000	2.7 mV	25 dB	Shibata	1-2	69.95	35.00

Save 5% with Heath's hi-fi system discount — see page 45.

Turntable packages and save up to $86.90

[7] The belt-drive automatic from Dual

The incredible Dual 1249. Features include: Belt drive. Gimbal-mounted tonearm with selectable tracking angles for automatic and manual play. Strobe, variable pitch, CD-4 compatibility, 33⅓ and 45 rpm operation. Includes base and choice of Shure M91ED or Empire 2000E/111 cartridge. Or, add $35 for Shure V-15 Type III or Audio-Technica AT-14S cartridge. 4½" H x 14¾" W x 12⅛" D, less base.

ACP-1148, Shpg. wt. 15 lbs. **279.95**
ADA-49-1, Walnut-stained wood base, Shpg. wt. 5 lbs. **16.95**
ADA-49-4, Dustcover, Shpg. wt. 5 lbs. **15.95**
ADA-39-2, 45-rpm spindle, Shpg. wt. 1 lb. **9.95**

SAVE UP TO $86.90
$279.95
With Base and Cartridge
If purchased separately, up to $366.85



[8] Popular Dual 1228 Automatic Turntable

Superb performance and reliability — 0.5 gram tracking; pitch control, illuminated strobe, damped cueing; synchronous motor; 4 lb. platter; anti-skating, 33⅓ and 45-rpm operation, CD-4 compatible. Includes base and your choice of a Shure M91 ED or Empire 2000E/111 cartridge. 13" W x 10¾" D x 5" above motor board, 2⅝" below.

ACP-1142, Shpg. wt. 18 lbs. **199.95**
ADA-39-1, Walnut-stained wood base, Shpg. wt. 5 lbs. **15.95**
ADA-1218-1, Dustcover, Shpg. wt. 3 lbs. **12.95**
ADA-39-2, 45-rpm spindle, Shpg. wt. 1 lb. **9.95**

SAVE UP TO $85.90
$199.95
With Base and Cartridge
If purchased separately, up to $285.85



[9] Garrard Belt-Drive Automatic Turntable

The Garrard Z 2000B combines the famous Zero Tracking Error tonearm with the reliability of a belt-drive mechanism. Has damped cueing, magnetic anti-skating, strobe, 33⅓ and 45 rpm operation. Compatible with CD-4. Includes base and Shure M91ED or Empire 2000E/111 cartridge. 15 5/16" W x 14⅛" D x 4⅜" above mounting board, 2 15/16" below.

ACP-1179, Shpg. wt. 17 lbs. **229.95**
ADP-1178, Walnut-grained vinyl-clad base, Shpg. wt. 7 lbs. **15.95**
ADP-1177, Dustcover, Shpg. wt. 3 lbs. **9.95**
ADA-100-2, 45-rpm spindle, Shpg. wt. 1 lb. **5.95**

SAVE UP TO $85.90
$229.95
With Base and Cartridge
If purchased separately, up to $315.85



[10] Thorens TD-160C Belt-Drive Manual Turntable

High performance combined with the simplicity and reliability of a manual turntable. A 16-pole synchronous motor, belt-drive and a massive 7 lb. platter virtually eliminate rumble, wow and flutter. Precision gimbal suspension and magnetic anti-skating let you use the finest cartridges. Viscous-damped cueing; 33⅓ and 45-rpm speeds. Includes walnut-stained wood base and hinged dustcover, your choice of a Shure M91 ED or Empire 2000E/111 cartridge. Or, add $35 for a Shure V-15 Type III or Audio-Technica AT-14S cartridge. 7¾" H x 17" W x 13½" D.

ACP-1099, Shpg. wt. 26 lbs. **230.00**

SAVE UP TO $69.95
$230.00
With Base and Cartridge
If purchased separately, up to $299.95



Order a complete audio system and save 5%

Here's another way Heath helps you get more good sound for your money. You can select exactly the components you want using the blank at right. Here's how — 1) order a receiver and a pair of speakers or 2) order an amplifier, a pair of speakers and a program source (tuner, turntable or tape deck). Add the costs of the individual components, then deduct 5%. That's the low Heathkit system price. Or, you can choose one of the carefully matched systems on pages 29-36.

The same 5% discount applies to any audio accessories you ordered with your system — remote or rear-channel speakers, an equipment cabinet, tape deck, turntable, audio 'scope or headphone control box. The only exception is the CR-1000A automotive FM tuner.

	Price
Speakers	
Receiver OR Amplifier & Program Source	
Accessories	
Total Price	
Less 5% Discount	
Heath System Price	

Heathkit Metal Locators are FUN!



Deluxe GD-348
$89.95

Low-Cost GD-48
$69.95

Find your fortune with a metal locator — the ideal beachcombing companion!

These Heathkit metal detectors will help you find coins, antiques, buried metal objects of any type, fast 'n easy. They're fun to use, practical too — use to locate buried plumbing pipes, metal cables, etc. before you dig.

1 GD-348 Deluxe Metal Locator

Heathkit metal locators use a sophisticated "induction balance" system — you don't hear anything until a piece of metal enters the field. Then the tone grows louder as you get closer to the object. Listen through the built-in speaker, optional headphones or use the front-panel meter to pinpoint your find. The GD-348 has null and ten-turn sensitivity controls conveniently located near the pistol grip handle. The shaft telescopes and the search coil folds flat for easy storage in suitcase or optional carrying case.

Kit GD-348, Locator only, Shpg. wt. 6 lbs. **89.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 1 lb. **5.95**
GDA-348-1, carrying case, Shpg. wt. 2 lbs. **11.95**



Convenient handle-mounted controls.

2 GD-48 Standard Metal Locator

The same sophisticated "induction balance" system as our deluxe locator — no tone variations to guess at, because there is no tone until a metal object enters the field. All solid-state circuitry, telescoping shaft, built-in speaker, headphone jack, meter. A single 9-volt battery (not included) supplies power.

Kit GD-48, Locator only, Shpg. wt. 6 lbs. **69.95**
GDA-48-1, 9-volt battery, Shpg. wt. 1 lb. **3.25**
GD-396, 600-ohm Superex headphones, Shpg. wt. 1 lb. **5.95**



Easy, three-evening assembly.



$36.95

Heathkit Electronic Darkroom Timer

A "must" for every well-equipped darkroom — a true electronic timer with no moving parts to reduce reliability or accuracy. The PT-15 provides accurate exposure for all contact printers and enlargers with two switch-selected ranges — up to 99 seconds in 1 second steps or up to 9.9 seconds in 0.1 second steps. At time/focus switch turns the safelight off when focusing and printing. Repeatable exposures with 2% accuracy.

Kit PT-15, Shpg. wt. 4 lbs. **36.95**



Informative Heath-approved Books

How to Build & Use Electronic Devices without Frustration, Panic, Mountains of Money, or an Engineering Degree — a practical guide to using op-amps and other electronic devices.
EDP-202 ..... **9.95**

Electronic Data Handbook, a convenient single-source of formulas and facts for solving virtually any electronic problem.
EDP-171 ..... **5.95**

CMOS Integrated Circuits, easy to understand explanation of how CMOS IC's work and how they are made. Build-it-yourself projects include a digital timer, wrist watch, capacitance meter and more.
EDP-197 ..... **4.95**

Metrics for Millions, a simplified, thorough explanation of metric weights and measures — shows how to convert from metric to U.S. and from U.S. to metric.
EDP-173 ..... **3.50**

How to Custom Design your Solid-State Equipment shows you how to adapt and combine scores of "building block" circuits to create the equipment you want.
EDP-199 ..... **5.50**



Reference Data for Radio Engineers, a complete and comprehensive reference work that has been a favorite of radio & electronic engineers, universities and libraries for years.
EDP-176 ..... **30.00**

TTL Cookbook, explains what TTL is, how it works, and how to use it.
EDP-183 ..... **8.95**

IC OP-AMP Cookbook, first book published to cover basic theory of the IC op amp in detail — includes over 250 practical circuit applications, liberally illustrated.
EDP-184 ..... **12.95**

The Electronic Invasion — a probing look at electronic snooping including technical explanations of how the equipment operates, written by a former private investigator.
EDP-203 ..... **5.45**

Modern Dictionary of Electronics. Clear, non-technical explanations of more than 18,000 terms.
EDP-177 ..... **14.50**

Radio Operator's License Question & Answer Manual, covers what you need to know to obtain a license.
EDP-193 ..... **7.45**

See page 48 for book-ordering information.

Find out how easy it is to build a kit — order the manual. See page 49.

Heathkit Educational Kits and Tools



$16.95

How to Understand and Use Your VTVM

Kit includes special power supply.

Kit EF-1, Text and power supply (for VTVM owners), Shpg. wt. 3 lbs. 16.95

Kit EF-1-5, EF-1 & IM-18, 13 lbs. 49.95

Kit EF-1-6, incl. EF-1 & IM-28, 15 lbs. . . 59.95

Manuals Only for EF-1, (single copy) **5.00;** (10 or more) ea. **3.00.**



$19.95

How to Understand and Use Your Oscilloscope

Learn theory and application of the oscilloscope. This specially designed kit includes an experimental chassis for construction of many different circuits for tests used to illustrate and support the text.

Kit EF-2, text, special chassis and parts, Shpg. wt. 4 lbs. 19.95

Manuals Only for EF-2 (single copy) **5.00;** (10 or more) ea. **3.00.**



$21.95

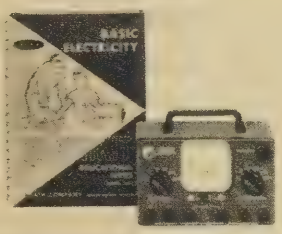
How to Understand and Use Your Signal Generator

This easy-to-understand text covers theory, function and use of RF and audio generators.

Kit EF-3, text, test chassis and parts, Shpg. wt. 4 lbs. 21.95

Kit EF-3-2, includes EF-3 and IG-102, Shpg. wt. 17 lbs. 62.95

Manuals Only for EF-3 (single copy) **5.00;** (10 or more) ea. **3.00.**



$32.95

Basic Electricity Kit/Course

The perfect way to learn about electricity and electronics. Learn theory, do interesting experiments to demonstrate principles. And at the same time you build a handy volt-ohm milliammeter. Your youngsters will enjoy a whole new world of electronics that can start them off on a profitable career.

Kit EK-1, Shpg. wt. 4 lbs. 32.95



"Learn by Doing" Jr. Electronics Workshop

Explore the exciting world of electronics! Learn about basic electronic components... transistors, capacitors, resistors, loudspeakers. Build 35 different circuits, using large, detailed pictorials & famous Heathkit instructions. All circuits use solderless spring terminal connectors and are powered by four "D" cells (not included). A large schematic diagram includes a simple but complete explanation of what each component does. Each part is identified by a drawing and its schematic equivalent as used in circuit diagrams so the builder learns to read schematics while experimenting.

Build Code Flasher, Diode Tester, Transistor Tester, Rain Alarm, Timing Relay, Listening Device, PA Amplifier, Intercom, Voice Relay, Burglar Alarm, Metronome, Siren, Light Meter, Light Sensing Alarm, Target "Hit" Alarm, Light Dependent Flasher, Light Dependent Oscillator, Sound Meter, Transistor Radios, Code Transmitter, Voice Transmitter, Capacitance Relay, Wheatstone Bridge, etc.

Kit JK-18A, Shpg. wt. 10 lbs. 29.95

Heath-approved tools for easy building

[1] **Basic kitbuilders tool set.** Everything you need to get started except soldering iron. Includes diagonal cutters, small long-nose pliers, wire stripper, ¼" nutdriver, #1 Phillips screwdriver, ⅛"-blade screwdriver.

GHP-1113, Shpg. wt. 2 lbs. 9.95

[2] **Heathkit 3-heat soldering iron kit.** Handy stand with metal cage keeps iron safe and secure. 3 heat ranges for all types of circuit work. Comes with six foot cord. Operates on 120 VAC.

Kit GH-17A, Shpg. wt. 5 lbs. 22.95

[3] **Weller W-PS 25-watt pencil soldering iron.** Lightweight and convenient. ⅛" chisel tip develops 860° heat fast, ready to work in seconds. U.L. and C.S.A. Approved.

Model GDP-207, Shg. wt. 1 lb. 7.95

[4] **Heath solder/de-solder set.** Weller W-PS 25-watt pencil soldering iron that develops 860°. Includes de-solder squeeze bulb with heat and solder-resistant nozzle.

GDP-1009, Shpg. wt. 1 lb. 9.95

[5] **Nut driver set.** Seven drivers for most commonly used nut sizes; 3/16", ¼", 5/16", ⅜", 11/32", 7/16" and ½". Plastic handles are color-coded for quick identification.

Model GDP-204, Shpg. wt. 2 lbs. 10.95

[6] **Kitbuilders tool set.** Includes combination wire stripper and diagonal side cutter; small long-nose pliers; three screwdrivers (3/32", ⅛", 3/16"); Weller W-PS soldering iron; five nut drivers (5/16", ¼", 5/16", ⅜", ½"); nut starter; soldering aid; solder, and information-packed "Kitbuilders Guide."

Model GH-25, Shpg. wt. 4 lbs. 27.95

[7] **Workbench extension lamp kit.** The extension arm comes already assembled. All you do is attach the socket, shade and cord. Lamp features a 45" reach and 360° sweep; vented shade, and movable base clamp. Incandescent bulb not included.

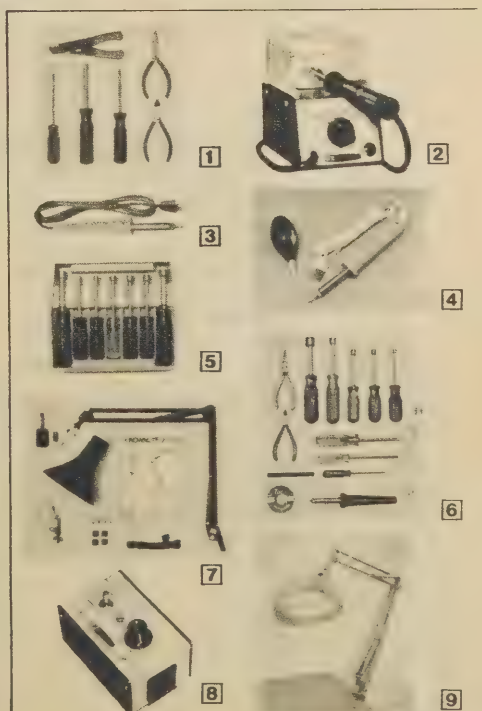
Kit GDP-202, Shpg. wt. 5 lbs. 16.95

[8] **Heathkit motor speed control.** Saves power, blades, bits, saws, etc. You can use a large drill to cut through steel at slow speed without overheating the motor. Ideal for use with any universal motor with nameplate rating of 15 amps or less. (Not for use with Dremel tools.)

Kit GD-973A, Shpg. wt. 2 lbs. 19.95

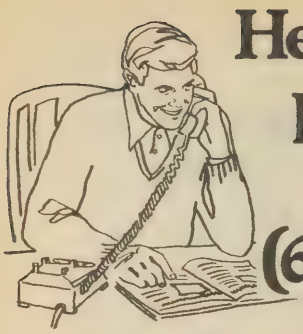
[9] **New Illuminated Magnifier.** Fluorescent lighting & 5" dia. 3 diopter lens take the strain out of close work at your bench. Clamps to horizontal surface; 360° movement; 45" reach. Requires 22-watt T-9 Circline Fluorescent tube (not included). Gray color.

Kit GDP-200, Shpg. wt. 8 lbs. 39.95



Find out how easy it is to build a kit — order the manual. See page 49.

Here's how to order your Heathkit Equipment



BY PHONE:

Use the Heath "Hotline", Call

(616) 982-3411

SAVE ENERGY

SHOP BY MAIL OR PHONE

BY MAIL:



- **Fill out the order blank completely.** Print your name exactly the same each time you order. When you print an address, please give full details including your Zip Code and phone number.

Heath has a phone order desk open 24 hours a day, 7 days a week. You can call in your order at minimum cost from most areas in the country, and after-hour rates are a bargain.

Replacement Parts Orders: 616-982-3571. Use this number for parts orders, weekdays only, from 8 A.M. to 4:30 P.M., EST.

Other Important Heath Company Phone Numbers:

International Sales: 616-981-3512

General Office: 616-982-3200

USE THESE NUMBERS FOR TECHNICAL HELP

8 A.M. to 4:30 P.M., EST, weekdays only

- R/C, Audio and Electronic Organs .....(616) 982-3310
- Amateur Radio .....(616) 982-3296
- Test Equipment, Strobe Lights, Calculators, Clocks, Weather Instruments .....(616) 982-3315
- Television .....(616) 982-3307
- Automotive, Marine, Metal Locators, Appliances, Security, Shortwave and General Products .....(616) 982-3496

Book Ordering Information

There is a $10 minimum order for a BOOK ONLY purchase. No minimum on books purchased with kits. Do not calculate postage on book orders, just add 35¢ for each book to the postage column on the order blank. Do not use the zone chart for book orders.

Discounts on Heathkit Continuing Education Programs

Enjoy a 15% discount on the purchase price of 10 or more of any one item from our Continuing Education product line. For information on quantities greater than 100 of an individual item, contact our Contract Sales Dept., Mr. Richard Shadler, Mgr. (616) 982-3519.

- **Please give full ordering information.** Be sure to give model number, description and price, exactly as shown in the catalog.
- **Total up your order.** Please refer to the chart and calculate shipping charges of each item separately, and total up amount. All items are mailable unless indicated "Exp./Frt.". These items sent transportation charges, collect.
- **Insurance for mailable items:** The 1st $100 value of insurance is free. Insurance rates for orders over $100: add 25¢ for each additional $100 value or fraction thereof.
- **Cash Orders:** Do not send currency or stamps. Send personal check, money order, etc. NOTE: If the charge for merchandise and transportation is less than the amount you send us, we will refund the difference.
- **Heath Revolving Charge Plan:** No money down. Up to two years to pay. Two convenient payment plans. Follow instructions on the reverse side of order blank. Be sure to sign charge agreement.
- **C.O.D.** — 20% deposit is required on C.O.D. orders placed by mail. Balance will be collected at time of delivery, and payment must be made in cash, as carriers usually will not accept personal checks. (C.O.D. fee for mailable items must be included with your remittance.)
- **ROUTING YOUR ORDER:** Heath will find the fastest service to your area by surface transportation. If you have a routing preference, please indicate on the order blank. West Coast customers should mention their choice of UPS Blue Label Service over regular UPS.
- **NON-MAILABLE ITEMS:** The Heathkit products shown as "Exp./Frt." are shipped by truck because these exceed weight and/or size limitations for mailing. Items are shipped with freight charges collect. Examples: Most TV antennas, large TV's, organs, cabinets, speaker systems and garage door mechanisms.
- **APO/FPO SHIPMENTS:** We can send Heathkit models that are able to be mailed to servicemen anyplace in the world. For APO and FPO addresses, use the following Zones to estimate cost: West Coast — Zone 8; East Coast — Zone 5. PAL (Airlift Military) carries packages by air transport for a fee of $1 per parcel in addition to regular postage rates. Parcel must weigh less than 30 lbs. and not exceed 60 in. in length and girth.

  SAM: Parcel must weigh less than 15 lbs. and not exceed 60 in. in length and girth combined. Be sure to check with your local Postmaster for exceptions to certain APO or FPO numbers.

HOW TO FIGURE SHIPPING & HANDLING CHARGES

Use the zone chart below and the **first** three numbers of your zip code to determine your zone. Then refer to the Heath shipping rate chart at right for charges for each model per shipping weight given in each price line.

The 1st $100 value of insurance is free. Insurance rates for orders over $100 add 25¢ for each additional $100 value or fraction thereof.

Rate chart is for "mailable" items only. "Exp./Frt." items will be shipped transportation charges collect.

If you have one item on your order which must be sent "Exp./Frt.", ALL items on that order will be sent "Exp./Frt."

Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone	Zip Code Prefixes	Zone
006-009	8	260-261	3	370-386	4	478	3	600-609	2	823-826	6
010-069	5	262-278	4	387	5	479-489	2	610-619	3	827	5
070-089	4	279	5	388	4	490-491	1	620-623	4	828-832	6
090-099	5	280-283	4	389-397	5	492	2	624-628	3	833	7
		284-285	5			493-495	1	629-668	4	834	6
100-108	5	286-293	4	400-406	3	496-499	3	669-679	5	835-838	7
109	4	294-295	5	407-409	4			680-687	4	840-847	6
110-119	5	296-297	4	410-412	3	500-516	4	688-693	5	850-864	7
120-123	4	298-299	5	413-422	4	520-524	3			865-884	6
124-126	5			423	3	525	4	700-722	5	890-898	7
127-128	4	300-303	4	424-426	4	526-528	3	723-727	4		
129	5	304	5	427-432	3	530-534	2	728-768	5	900-921	8
130-152	4	305-307	4	433-436	2	535-539	3	769	6	922-928	7
153	3	308-329	5	437-457	3	540	4	770-778	5	930-934	8
154-160	4	330-334	6	458	2	541-546	3	779-789	6	935	7
161	3	335-338	5	460-462	3	547-548	4	790-792	5	936-960	8
162-163	4	339	6	463-464	2	549	3	793-799	6	961	7
164-165	3	350-352	4	465-466	1	550-566	4			962-976	8
166-199	4	354	5	467-469	2	567	5	800-803	5	977-979	7
		355-359	4	470-472	3	570-572	4	804-805	6	980-987	8
200-232	4	360-361	5	473	2	573-588	5	806-807	5	988-994	7
233-237	5	362	4	474-475	3	590-597	6	808-816	6	995-999	8
238-259	4	363-369	5	476-477	4	598-599	7	820-822	5		

Heath Shipping Charges

(Mailable items only)

Shipping Weight	Zone 1 & 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	BLUE LABEL AIR SERVICE CHARGE to Calif., Ore., Wash. only.
1 lb.	$0.69	$0.71	$0.74	$0.76	$0.80	$0.84	$0.89	$1.02
2	0.76	0.79	0.84	0.89	0.97	1.05	1.15	1.41
3	0.82	0.87	0.95	1.03	1.14	1.26	1.40	1.80
4	0.88	0.95	1.05	1.16	1.31	1.47	1.66	2.19
5	0.95	1.03	1.16	1.29	1.48	1.69	1.92	2.58
6	1.01	1.10	1.27	1.42	1.64	1.90	2.18	2.97
7	1.07	1.18	1.37	1.55	1.81	2.11	2.44	3.36
8	1.13	1.26	1.48	1.69	1.98	2.32	2.69	3.75
9	1.20	1.34	1.58	1.82	2.15	2.53	2.95	4.14
10	1.26	1.42	1.69	1.95	2.32	2.74	3.21	4.53
11	1.32	1.50	1.80	2.08	2.50	2.95	3.47	4.92
12	1.39	1.58	1.90	2.21	2.66	3.16	3.73	5.31
13	1.45	1.66	2.01	2.35	2.83	3.37	3.98	5.70
14	1.51	1.74	2.11	2.48	3.00	3.58	4.24	6.09
15	1.58	1.82	2.22	2.61	3.17	3.80	4.50	6.48
16	1.64	1.89	2.33	2.74	3.33	4.01	4.76	6.87
17	1.70	1.97	2.43	2.87	3.50	4.22	5.02	7.26
18	1.76	2.05	2.54	3.01	3.67	4.43	5.27	7.65
19	1.83	2.13	2.64	3.14	3.84	4.64	5.53	8.04
20	1.81	2.21	2.75	3.27	4.01	4.85	5.79	8.43
21	1.95	2.29	2.86	3.40	4.18	5.06	6.05	8.82
22	2.02	2.37	2.96	3.53	4.35	5.27	6.31	9.21
23	2.08	2.45	3.07	3.67	4.52	5.48	6.56	9.60
24	2.14	2.53	3.17	3.80	4.69	5.69	6.82	9.99
25	2.21	2.61	3.28	3.93	4.86	5.91	7.08	10.38
Add'l lbs.	.07/ lb.	.08/ lb.	.11/ lb.	.14/ lb.	.17/ lb.	.22/ lb.	.26/ lb.	.39

IMPORTANT: 1. Shipping weights listed for model numbers shipped in more than one carton have been adjusted to provide correct postage.

NAME _____

ADDRESS _____

CITY & STATE _____ ZIP _____

Put Stamp here. The Post Office will not deliver mail without postage.

HEATH COMPANY
BENTON HARBOR,
MICHIGAN 49022

NOW...
no purchase necessary to open your Heath Revolving Charge Account ...



Have you Enclosed Your Order, with Check, Money Order, or Your Account Number?

THANK YOU FOR SHOPPING HEATH.

see order form for details

HEATH

charg-a-kit

REVOLVING CHARGE

Enjoy your favorite Heathkit product NOW — the easy way — by filling out and mailing the Heath Revolving Charge Account application on the back of the order form. No purchase necessary. Once your account is opened, a phone call or letter will send your order on its way to you — NO CASH REQUIRED.

Heathkit Catalogs for your friends...

Anyone interested in the satisfaction of doing things for themselves will enjoy the latest Heathkit Catalog — the world's largest electronic kit catalog. If you have friends you think would like to receive copies, simply jot down their names & addresses below, and we'll be happy to send them their own personal Heathkit catalogs.

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

Name_____

Address_____

City_____ State_____ Zip_____

YOUR MONEY-BACK MANUAL ORDER FORM

See how easy kitbuilding really is! "Shop" a Heathkit manual before you buy ...only $2 (except Color TV, Organs, SB-104, HW-104, AN-2016, EK & EF series which are $5) plus 50¢ each postage and handling. And we'll deduct the price of the manual when you buy the kit (just include the manual invoice with your kit order). Use this mini order blank for all manual orders. NOTE: This offer does not apply to EE-series Individual Learning Programs.



Use This Form For Manual Orders Only—Use Regular Order Blank For Book Orders

Enclosed is $_____. Please send me the following Heathkit manual(s): (I understand that the price of the manual will be refunded when I order the kit.)

MODEL NO.(S):_____

NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____ ZIP:_____

Note: When ordering Revolving Charge, please write current account number here to speed processing:

AA [ ][ ][ ][ ][ ][ ]

HEATH COMPANY
a Schlumberger company
Benton Harbor, Michigan 49022

ORDER FORM

PLEASE DO NOT WRITE IN THIS SPACE

1 Please Print or Write Plainly — Always Use the Same Name.

Name

Street Address

City

State Zip

TELEPHONE NUMBER ▶ AREA CODE ▼ [ ][ ][ ] YOUR PHONE NUMBER ▼ [ ][ ][ ][ ][ ][ ][ ]

2 Ship To Another Address?

Name

Street Address

City

State Zip

3 We ship UPS for fastest delivery — indicate other preference below.

4 Include Zone from Chart [ ]

5 What new kits would you like us to make? _____

6 If you have moved since your last order, please give FORMER ADDRESS here

Name

Street Address

City

State Zip

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	1	2	3	4	5	6	7	8	9
	P/L		COD		I		R		A/F		PAL		U		P	2	3	4	5	6	7	8	9	10	11	12	13	14	15							

QUAN.	MODEL NUMBER	KIT DESCRIPTION	WT.	PRICE EA.	TOTAL

IMPORTANT:

1. Please use separate sheet to order parts or for any correspondence.
2. All prices quoted are net FOB Benton Harbor, Mich., and apply to the U.S., FPO and APO areas.
3. Prices and specifications subject to change without notice.
4. MAILABLE ITEMS: Figure charges for each model separately using indicated shipping weight, then remit total of all charges.
5. "Exp./Frt." items are sent "Freight Collect."
6. If one item in an order is "Exp./Frt.", *all* items in that order will be sent "Exp./Frt." Do not send postage money.

PLEASE DO NOT WRITE IN THIS SPACE

Heath Co. Catalog **7** 807-300

If merchandise ordered from another catalog, please list Catalog No._____

10 TOTAL FOR MERCHANDISE. $

Add **4% Sales Tax** for deliveries in Michigan only.

For Mailable Items only

Total shipping charges here (see chart) $_____ + Insurance: 1st $100.00 FREE, 25¢ for each additional $100.00 or fraction $_____ =

8 TYPE OF ORDER (CHECK ONE)

- ☐ **CASH** Please use registered mail for currency.
- ☐ **C.O.D.** 20% deposit required. Also include 85¢ C.O.D. fee.
- ☐ **REVOLVING CHARGE** See reverse side for details.
- ☐ **ADD ON**

9 Is this your first order?

☐ YES ☐ NO

If no, list year of last purchase date:_____

Allowance if offered	
CASH PRICE	
Amount Due Previous Order. Inv. #_____	
TOTAL AMOUNT.	
LESS: Down Payment_____	
20% C.O.D. Deposit	
UNPAID BALANCE (Total Amount less Down Payment or C.O.D. deposit)	

Heath's Convenient Revolving Charge Plan

The "Cash Price" of merchandise on Heath's Revolving Charge Plans includes the cash price as listed on the page describing the merchandise, plus applicable sales tax, shipping charges, and less any advertised allowances. Regular or extended terms are the two plans available for your use. To use the extended plan, the balance must be at least $400. The amount of your monthly installment can be determined from the chart below. The **periodic rate** for the **FINANCE CHARGE is 1½%** per month and is equal to an **ANNUAL PERCENTAGE RATE of 18%** before deducting payments and credits or adding purchases made during the current billing period. No down payment is required on new orders but one may be remitted if desired. **HOW TO OPEN AN ACCOUNT.** Just fill out the credit application, sign the Revolving Charge agreement and mail to Heath with your order. **ADD-ON PURCHASES** List items you want on order blank, check the add-on box, and give your account number. Sign the Revolving Charge agreement, and send to us.

REVOLVING CHARGE AGREEMENT

TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022

I hereby purchase the merchandise listed on the reverse side at a time sale price which is the cash price including shipping charges and tax, if any, less down payment, if any, plus the **[FINANCE CHARGE]** which, in lieu of being added to this contract in total as of the date hereof will be added monthly on the previous month's ending balance of my account before deducting payments and credits or adding purchases made during the current billing period. **[FINANCE CHARGE]** will be assessed on the balance according to the following schedule or in accordance with the laws of the State of my residence which ever is the lesser.

Account Balance Amount
ALL BALANCES
[Periodic Percentage Rate]
1½%
[ANNUAL PERCENTAGE RATE]
18%

The minimum **[FINANCE CHARGE]** assessed will be .50¢ on all small balances. If within 30 days from my billing date I pay the full outstanding balance shown on my monthly statement, no **[FINANCE CHARGE]** on such balance, will be charged on any subsequent statement.

The highest level of my balance reflected by the payment chart will govern my monthly payment, beginning 30 days from the cycle closing date shown on the statement, until such time as the total unpaid balance of each purchase is fully paid (minimum $10). Regular or Extended Terms are the two plans available for my use. To use the extended plan, the balance of my account must be at least $400. The amount of my monthly installment can be determined from the charts below:

REGULAR REVOLVING CHARGE

Charge up to	$150	200	250	300	350	400	450	500	550
Pay Monthly	$10	15	20	25	30	35	40	45	50

EXTENDED REVOLVING CHARGE

Charge up to	$400	500	600	700	800	900	1,000	1,100	1,200
Pay Monthly	$20	30	30	35	40	45	50	55	60

Add $5 for every $100, or a portion thereof over $1,200.

I will not sell, transfer possession of, remove or encumber the property without your written consent: Upon default on the terms of this agreement, you may declare my existing outstanding balance due and payable and you may repossess the property. If legal proceedings are commenced, I will be required to pay reasonable attorney's fees in such an amount as may be allowed by the court. My installments shall be applied as follows: In case of items purchased on different dates, the first purchase shall be deemed first paid for. In the case of items purchased on the same date, the lowest price shall be deemed first paid for. You are authorized to investigate my credit record and report to proper persons and bureaus my performance of this agreement. **NOTICE TO BUYER: 1. Do not sign this agreement before you read it or if it contains blank spaces. You are entitled to a copy of the agreement you sign. 2. The other side of this page is part of this contract. 3. No FINANCE CHARGE IF PAID IN FULL IN 30 DAYS FROM CYCLE BILLING CLOSING DATE AS SHOWN ON STATEMENT.**

Date_____

Sign here_____
(Customer's Signature)

CREDIT APPLICATION

Check Revolving Charge Plan Desired
☐ Regular ☐ Extended

NAME_____
(Please Print) (First Name) (Middle Initial) (Last Name)

IMPORTANT: Please fill in completely. Omissions and errors cause delays. SIGN REVOLVING AGREEMENT ABOVE.

ADDRESS_____

CITY_____ STATE_____ ZIP CODE_____

If Military Give Rank_____

Number of Dependents_____ How Long at Present Address_____ No. of Rooms_____ OWN ☐ RENT ☐ BOARD ☐ Monthly Rent or Mortgage Payments $_____

Former Address_____ City_____ State_____ How Long_____

Phone No._____ AGE_____ MARRIED ☐ UNMARRIED ☐ SEPARATED ☐ Spouse's First Name_____

Employer_____ Address_____ City_____ State_____

How Long_____ Occupation_____ Social Security No._____ Military Serial No. (if in service)_____ EARNINGS $_____ Hr. ☐ Wkly. ☐

Former Employer_____ How Long_____

Name of Spouse's Employer_____ Address of Spouse's Employer_____ SPOUSE'S WEEKLY INCOME $_____

Other Income — Give Details_____ TOTAL FAMILY INCOME $_____

Your Bank_____ Address_____ Type of Account_____

CREDIT REFERENCE: (Give 2 Merchants, Firms or Finance Companies with whom you do or have done business.)

First Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Second Credit Reference_____ Address_____ Present Balance $_____ Monthly Payment $_____

Nearest Relative_____ Address_____ Relationship_____
(Do not list those with whom you are living) (If Military give permanent mailing address)

THE PRESIDENT'S CORNER

ATTENTION

GR-2000 Owners

If you purchased your GR-2000 prior to June 15, 1975, a modification kit is available to add the latest design improvements to the vertical circuit board. Just send an order to: Parts Department, Heath Company, Benton Harbor, Michigan 49022. Ask for Modification Kit #830-19. It will be mailed to you at no charge.

SB-104 Owners

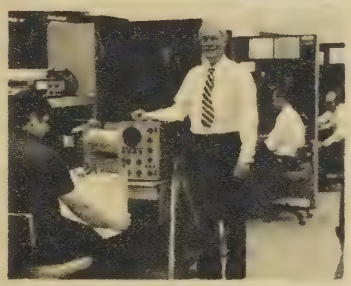
A simple modification improves the SB-104 Receiver's measured sensitivity on all bands. Owners of SB-104's with series numbers (shown on the blue and white label on the VFO) 00450 through 04530 may obtain this modification kit at no cost by ordering Part No. 830-20 from: Parts Department, Heath Company, Benton Harbor, Michigan 49022. This modification is already incorporated into SB-104's with higher series numbers and all HW-104's.



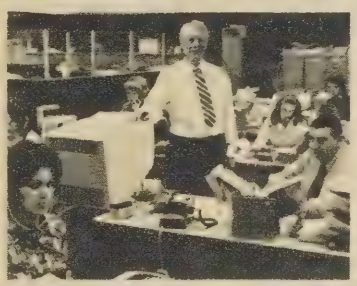
"When we say we won't let you fail, we back it up

...with people who really care about your satisfaction. And when you tell us you're pleased with Heathkit products, you're really talking about the people who work at our company...people whose only concern is to make kit building pleasant and successful... for you."

D. W. Nurse
President



"Heath people help us maintain one of the highest Quality Assurance levels in the electronics industry... and quality control starts the moment incoming parts arrive at our receiving dock. But, more importantly, quality control never stops with Heathkit products. From design to sales to service, our people are devoted to giving you superior quality and exceptional value."



"Personal, professional help is always available to you from qualified technical people... either at your nearby Heathkit Electronic Center, or from the factory, by phone or letter. Satisfied customers have discovered the time-saving, practical advantages of talking with our technical people... they're an exceptional group of uniquely talented kit experts."



"Of course, the Manual Department is what Heath Company is all about... because our reputation for easy-to-follow assembly instructions starts right here. And as you might imagine, our manual writers spend as much time developing those instructions as our engineers spend on the design of a new kit. And that's how Heath people help satisfy customer people... by caring."

HEATHKIT ELECTRONIC CENTERS (Sales and Service) Units of Schlumberger Products Corporation

ARIZONA
Phoenix, 85017
2727 W. Indian School Rd.
Phone: 602-279-6247

CALIFORNIA
Anaheim, 92805
330 E. Ball Rd.
Phone: 714-776-9420
El Cerrito, 94530
6000 Potrero Ave.
Phone: 415-236-8870
Los Angeles, 90007
2309 S. Flower St.
Phone: 213-749-0261
Pomona, 91767
1555 Orange Grove Ave. N.
Phone: 714-623-3545
Redwood City, 94063
2001 Middlefield Rd.
Phone: 415-365-8155
San Diego (La Mesa, 92041)
8363 Center Dr.
Phone: 714-461-0110
Woodland Hills, 91364
22504 Ventura Blvd.
Phone: 213-883-0531

COLORADO
Denver, 80212
5940 W. 38th Ave.
Phone: 303-422-3408

CONNECTICUT
Hartford (Avon, 06001)
395 W. Main St. (Rte. 44)
Phone: 203-678-0323

FLORIDA
Miami (Hialeah, 33012)
4705 W. 16th Ave.
Phone: 305-823-2280
Tampa, 33614
4019 West Hillsborough Ave.
Phone: 813-886-2541

GEORGIA
Atlanta, 30342
5285 Roswell Rd.
Phone: 404-252-4341

ILLINOIS
Chicago, 60645
3462-66 W. Devon Ave.
Phone: 312-583-3920
Chicago (Downers Grove, 60515)
224 Ogden Ave.
Phone: 312-852-1304

INDIANA
Indianapolis, 46220
2112 E. 62nd St.
Phone: 317-257-4321

KANSAS
Kansas City (Mission, 66202)
5960 Lamar Ave.
Phone: 913-362-4486

KENTUCKY
Louisville, 40243
12401 Shelbyville Rd.
Phone: 502-245-7811

LOUISIANA
New Orleans (Kenner, 70062)
1900 Veterans Memorial Hwy.
Phone: 504-722-6321

MARYLAND
Baltimore, 21234
1713 E. Joppa Rd.
Phone: 301-661-4446
Rockville, 20852
5542 Nicholson Lane
Phone: 301-881-5420

MASSACHUSETTS
Boston (Peabody, 01960)
242 Andover St.
Phone: (617) 531-9330
Boston (Wellesley, 02181)
165 Worcester Ave.
(Rt. 9 just west of Rt. 128)
Phone: 617-237-1510

MICHIGAN
Detroit, 48219
18645 W. Eight Mile Rd.
Phone: 313-535-6480
E. Detroit, 48021
18149 E. Eight Mile Rd.
Phone: 313-772-0416

MINNESOTA
Minneapolis (Hopkins, 55343)
101 Shady Oak Rd.
Phone: 612-938-6371

MISSOURI
St. Louis (Bridgeton) 63044
3794 McKelvey Rd.
Phone: 314-291-1850

NEBRASKA
Omaha, 68134
9207 Maple St.
Phone: 402-391-2071

NEW JERSEY
Fair Lawn, 07410
35-07 Broadway (Rte. 4)
Phone: 201-791-6935

NEW YORK
Buffalo (Amherst, 14226)
3476 Sheridan Dr.
Phone: 716-835-3090
Jericho, Long Island, 11753
15 Jericho Turnpike
Phone: 516-334-8181
New York, 10036
35 W. 45th St.
Phone: 212-765-4590
Rochester, 14623
937 Jefferson Rd.
Phone: 716-244-5470
White Plains
(North White Plains, 10603)
7 Reservoir Rd.
Phone: 914-761-7690

OHIO
Cincinnati (Woodlawn, 45215)
10133 Springfield Pike
Phone: 513-771-8850
Cleveland, 44129
5444 Pearl Rd.
Phone: 216-886-2590
Columbus, 43229
2500 Morse Rd.
Phone: 614-475-7200
Toledo, 43615
48 So. Byrne Rd.
Phone: 419-537-1887

PENNSYLVANIA
Philadelphia, 19149
6318 Roosevelt Blvd.
Phone: 215-288-0180
Frazer (Chester Co.) 19355
630 Lancaster Pike
Phone: 215-647-5555
Pittsburgh, 15235
3482 Wm. Penn Hwy.
Phone: 412-824-3564

RHODE ISLAND
Providence (Warwick, 02886)
558 Greenwich Ave.
Phone: 401-738-5150

TEXAS
Dallas, 75201
2715 Ross Ave.
Phone: 214-826-4053
Houston, 77027
3705 Westheimer
Phone: 713-623-2090

VIRGINIA
Norfolk
(Virginia Beach, 23455)
1055 Independence Blvd.
Phone: 804-460-0997

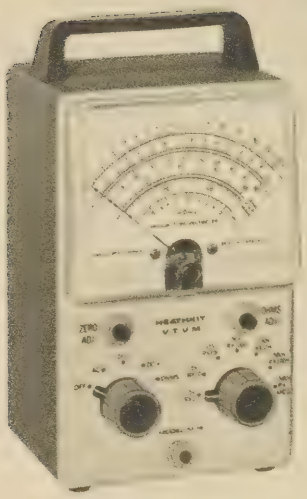
WASHINGTON
Seattle, 98121
2221 Third Ave.
Phone: 206-682-2172

WISCONSIN
Milwaukee, 53216
5215 W. Fond du Lac
Phone: 414-873-8250

INDEPENDENT DISTRIBUTORS: ALASKA: Yukon Radio Supply 1) 1231 West Northern Lights Blvd., Anchorage 99503, Phone 907-274-4423; 2) 1112 Cushman St., Fairbanks 99701, Phone 907-452-1011; 3) Box 623, Valdez 99686, Phone 907-835-4880.

Get Heath Testers for that "extra measure"

Famous Heath VTVM's — you need one for your bench!



$36.95 Kit

$70.00 Assembled



$46.95 Kit

$90.00 Assembled

Heathkit IM-18—our most popular VTVM

Features single probe for all measurements — seven AC, seven DC, and seven Ohms ranges; precision 4½" 200 μA meter; 1% precision divider network resistors; ±1 dB 25 Hz to 1 MHz frequency response; rms & p-p AC voltage measurements; circuit board design for fast, easy assembly; 120/240 VAC wiring options.

Kit IM-18, Shpg. wt. 5 lbs. **36.95**

Assembled SM-20A, Shpg. wt. 6 lbs. **70.00**

IM-18 SPECIFICATIONS

Meter scales: DC & AC (rms): 0-1.5, 15, 50, 150, 500, 1500 V full scale. **AC peak-to-peak:** 0.4, 14, 40, 140, 400, 1400, 4000 V full scale. **Resistance:** 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures 1 ohm to 100 megohms. **Meter:** 4½" 200 μA movement: **Input resistance:** 11 megohms (1 megohm in probe) on all DC ranges; 1 megohm shunted by 35 pF on all AC ranges. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** DC ±3%, AC ±5% of full scale. **Frequency response:** ±1 dB, 25 Hz to MHz (600 ohm source). **Battery requirements:** 1.5 V, size "C" cell (not supplied). **Power requirement:** 120/240 VAC, 60/50 Hz. 10 W. **Dimensions:** 7⅜" H x 4¹⁵⁄₁₆" W x 4¼" D.

Heathkit Laboratory AC VTVM



The IM-38 features extended accuracy in measuring low-level AC voltages. Any voltage from 10 Hz to 1 MHz can be measured quickly. It can also be used as a VU meter to indicate changing AC voltages, such as those that occur in speech or music equipment.

Kit IM-38, Shpg. wt. 5 lbs. **52.50**

Assembled SM-22A, Shpg. wt. 6 lbs. **85.00**

IM-38 SPECIFICATIONS

Frequency response: ±1 dB 10 Hz to 500 kHz. ±2 dB 10 Hz to 1 MHz, all ranges. **Ranges:** Ten ranges from 0.01 to 300 V rms full scale. **Decibels:** Total-range −52 to +58, meter scale −12 to +2 dB (0 dB = 1 mW in 600 ohms), ten switch selected ranges from −40 dB to +50 dB in 10 dB steps. **Input impedance:** 10 megohms shunted by 12 pF on ranges 10 to 300 V, scale. 10 megohms shunted by 22 pF on ranges .01 to 3 V. **Accuracy:** Within 5% of full scale. **Power requirements:** 120/250 VAC, 60/50 Hz, 10 W. **Dimensions:** 7⅜" H x 4¹⁵⁄₁₆" W x 4⅛" D.

Heathkit IM-28 Service Bench VTVM

A deluxe version of the IM-18 in a big stay-put size.

Kit IM-28, Shpg. wt. 7 lbs. **46.95**

Assembled SM-21A, Shpg. wt. 7 lbs. **90.00**

IM-28 SPECIFICATIONS

DC VOLTMETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. **Input Resistance:** 11 megohm (1 megohm in probe) on all ranges: 1100 megohms with accessory probe. **Circuit:** Balanced bridge (push-pull) using twin triode. **Accuracy:** ±3% of full scale. **AC VOLTMETER — Ranges:** 0-1.5, 5, 15, 50, 150, 500, 1500 rms scales. **Frequency Response (5 V range):** ±1 dB 25 Hz to 1 MHz (800 ohm source, referred to 60 Hz). **Accuracy:** 5% of full scale. **Input Resistance & Capacitance:** 1 megohm shunted by 40 pF measured at input terminals (200 pF at probe tip). **OHMMETER — Ranges:** Scale with 10 ohm center X1, X10, X100, X1000, X10k, X100k, X1 meg. Measures .1 ohm to 1000 megohms with internal battery. **Meter:** 6" 200 μA movement, polystyrene case. **Battery:** 1½ V, "C" cell (not supplied). **Power requirement:** 120/240 VAC, 60/50 Hz, 10 W. **Dimensions:** 5" H x 12¹¹⁄₁₆" W x 4¾" D.

$17.95 Kit

Heathkit 40 kV Probe Meter



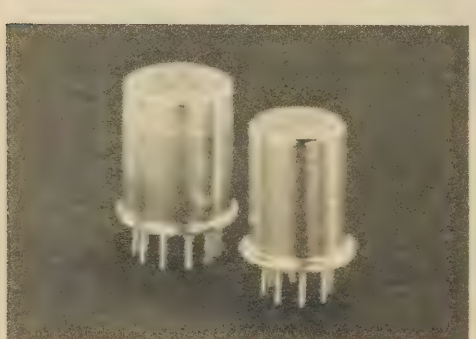
TV tube voltage measurements are fast and convenient with the new Heathkit IM-5210 Probe Meter. It is light weight, portable and will measure DC voltages up to 40 kV with ±3% accuracy. You just attach the ground clip to the TV chassis, place the probe against the tube's high voltage connector and switch on the meter — it's as simple as that. The on-off switch on the handle protects the meter during hookup and when the probe is not in use. Assembles easily, in about an hour.

Kit IM-5210, 2 lbs., mailable **17.95**

Assembled SM-5210, factory wired version of the IM-5210, 2 lbs., mailable .....**Was 24.95, Now Only 19.95**

IM-5210 SPECIFICATIONS

Voltage Range: 0-40 kVDC. **Accuracy:** ±3% of full scale. **Size:** 1½" H x 1⅞" W x 15" D.



Now — convert your tube-type Heathkit VTVM to instant-on solid-state design

Replaces the 6AL5 and 12AU7 tubes used in many Heathkit VTVMs, including IM-18 and IM-28. Two solid-state devices plug directly into the tube sockets. One is a high voltage amplifier containing 4 FETs; the other contains 2 special diodes with low forward drop. Provides instant-on service, eliminates pointer-drift corrections.

IMA-18-1, Shpg. wt. 1 lb. **16.95**

Get the most from your meter

Handbook of Practical Electronic Tests & Measurements. EDP-137 .....**16.95**

101 Ways to Use Your VOM/VTVM, covers equipment checks ac & dc voltage, dc current, ohmmeter, signal tracing, alignment & color TV. **EDP-150** **4.50**

Understanding & Using the VOM & DVM. EDP-140 .....**4.95**

Electronic Measurements Simplified, covers TV servicing, 2-way & ham radio, CB, etc. **EDP-141** **4.95**

See page 48 for book-ordering information



Heathkit performance specifications are guaranteed.

of precision and accuracy



Heathkit IM-2202 Portable Digital Multimeter

The lowest-priced professional-grade digital multimeter we've ever offered! 26 ranges — measures AC and DC volts, DC current and resistance. Has 100% overrange capability, separate voltage and current inputs for circuit protection. All functions are protected against accidentally applied voltages up to 250 volts. Voltage ranges have high input impedance (10 megohm typical) for minimum circuit loading. Current ranges feature low voltage drop (100 mV typical) for high accuracy. Resistance ranges limit maximum test current to 1 mA. 2-volt full scale measurement on 1k, 10k and 1 meg ranges allow forward biased junction testing of semiconductor devices.

If a lab standard is used for calibration, DC accuracy is 0.2%. AC accuracy is 0.5% to 10 kHz. Internal standards (supplied) allow field calibration to 0.5% for DC and 1% for AC. Has 3½-digit display with leading zero suppression, automatic polarity indication and decimal placement. A flashing "1" display indicates overrange. Four push-button function switches and a continuous rotation range switch select range. Ultra-compact, with a single MOS/LSI integrated circuit containing all digital and logic functions. Assembly of the IM-2202 is aided by circuit board construction and plug-in components, but previous kitbuilding experience is recommended. Operates on four rechargeable nickel-cadmium batteries (included), 110 or 220 VAC, or temporarily on four "C" cells.

Kit IM-2202, Shpg. wt. 7 lbs. **179.95**

IM-2202 SPECIFICATIONS

NOTE: Accuracy specifications of the IM-2202 depend on use of built-in references or laboratory standard references for calibration.

DC VOLTAGE — Range/Input Impedance: 100.0 mV/50 MΩ, 1.000 V/500 MΩ, 10.00 V/10 MΩ, 100.0 V/10 MΩ, 1000 V/10 MΩ. **Overload Capability:** 300 V on 100 mV & 1 V ranges; 1000 V on 10 V, 100 V & 1000 V ranges. **Accuracy:** Built-in references, ±0.5%, ±1 digit. Laboratory standards, ±0.2%, ±1 digit. **AC VOLTAGE — Range/Input Impedance:** 100.0 mV/10 MΩ-120 pF, 1.000 V/10 MΩ-120 pF, 10.00 V/10 MΩ-60 pF, 100.0 V/10 MΩ-60 pF, 750 V/10 MΩ-60 pF. **Overload Capability:** 250 V on 100 mV & 1 V ranges; 750 V on 10 V, 100 V & 750 V ranges. **Accuracy:** Built-in references...±1.0%, ±3 digits; 40 Hz to 1 kHz (except 40 Hz to 10 kHz on 100 mV and ranges). Laboratory standards...±0.5%, ±3 digits; 40 Hz to 2 kHz on 750 range). **DC CURRENT — Range/Voltage Drop:** 100.0 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mV, 100.0 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±.5%, ±1 digit (except ±1%, ±1 digit on 1000 mA range). Laboratory standards...±.2%, ±1 digit (except ±.5%, ±1 digit on 1000 mA range). **Overload Protection:** Input coupled through 3.0 Ampere fuse to shunt diodes for overloads above approximate 1.2 Volts. **AC CURRENT — Range/Voltage Drop:** 100 μA/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mV, 100.0 mA/150 mV, 1000 mA/300 mV. **Accuracy:** Built-in references...±1.0% ±3 digits (except ±1.5%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. Laboratory references...±.5%, ±3 digits (except ±1.0%, ±3 digits on 1000 mA range); 40 Hz to 10 kHz. **Overload Protection:** Input coupled through 3.0 Ampere fuse to shunt diodes for overloads above approximate 1.2 Volts. **RESISTANCE — Range/Test Current:** 100.0 Ω/1.0 mA, 1.000 kΩ/1.0 mA, 10.00 kΩ/0.1 mA, 100.0 kΩ/1.0 μA, 1000 kΩ/10. μA. **Accuracy:** Built-in references...±.5%, ±1 digit. Laboratory standards...±2%, ±1 digit. **Open-circuit Voltage:** 12 VDC. **Overload Protection:** Positive input overvoltage protection by blocking diode to 400 volts; negative input over-voltage through 0.03 A fuse and shunt diode. **GENERAL — Overrange Capability:** 100% on all ranges except 1000 VDC & 750 VAC. **Display:** 1999 maximum; seven segment planar; 0.55" high digits. **Display Rate:** Approximately 5 per second, non-blinking. **Normal Mode Rejection:** 35 dB (line operation); extended on battery operation. **Common Mode Rejection:** 80 dB (line operation); extended on battery operation. **Power Line Isolation:** May be operated 1500 V above power line ground (during line operation). **Operating Temperature Range:** 10°C to 40°C. **Power Requirement:** 110 to 130 VAC, or 220 to 260 VAC (internal selectable)); 60/50 Hz; 5 watts typical during charge. **Size (overall including handle folded to rear):** 3" H x 8¼" W x 8" D.



Our lowest cost bench DVM

The low-cost DMM that hams, hobbyists and service techs have been waiting for. Its full-function capability even includes AC voltage measurements up to 700 volts. Has four overlapping AC & DC voltage & current ranges and five resistance ranges. Accuracy is 1% on DC volts, 1½% on AC volts and AC/DC current, and 2% on resistance.

A solid-state design uses IC circuitry for a clear non-blinking 2½-digit display with automatic decimal positioning. The easy assembly makes it a great project for student electronics labs. And the exclusive Heath built-in calibration standards are all that's needed for initial and periodic adjustments.

Features overload protection on all ranges, 120 or 240 VAC operation, isolated floating ground, attractive heavy-duty case to withstand rugged use, universal banana jack inputs.

Kit IM-1212, Shpg. wt. 7 lbs. **79.95**

Assembled SM-1212, wired version of the IM-1212, Shpg. wt. 7 lbs. **125.00**

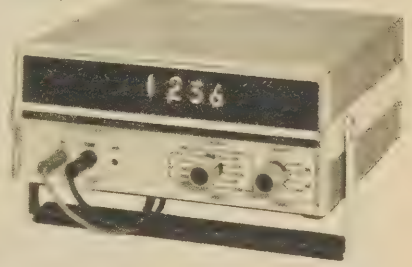
IM-1212 SPECIFICATIONS

Ranges: (full scale): DC volts: 2, 20, 200, 1,000V. DC current: 2, 20, 200, 2,000 mA. AC volts: 2, 20, 200, 700V rms (25 Hz to 10 kHz). AC current: 2, 20, 200, 2,000 mA rms (25 Hz to 10 kHz). Ohms: 200, 2k, 20k, 200k, 2,000k ohms. **Maximum Input Without Damage:** 3 A into AC or DC mA, and ohms (fuse protected). 700 VAC rms into volts (except 2V range — 140 VAC rms). 1000 VDC into volts (except 2V range — 200 VDC). **Accuracy:** (Full scale ±1 digit): 1% DCV (1000 V max.), 1½% ACV (700V max.), AC & DC current, 2% ohms. **Input Impedance:** 1 megohm on all voltage ranges. 2V drop maximum on current ranges. **Power Requirement:** 120/240 VAC, 60/50 Hz, 8 watts. **Dimensions:** 3¼" H x 9½" W x 8¾" D.

Our finest 3½-digit DVM

26 ranges — AC, DC volts, DC current, and resistance. Has automatic polarity indication and decimal positioning, overrange indication, complete overload protection on all ranges. One of the finest DVM's you can buy!

Kit IM-102, Shpg. wt. 9 lbs. **249.95**

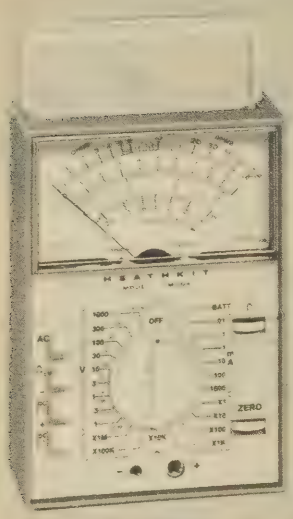


IM-102 SPECIFICATIONS

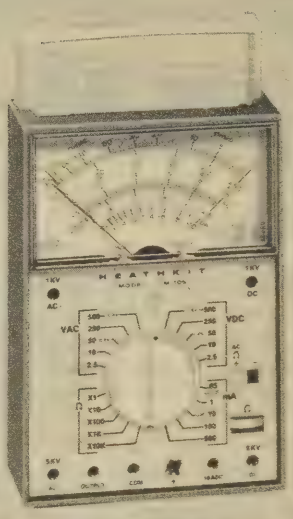
DC VOLTMETER — 5 Ranges: 200 mV, 2V, 20V, 200V, 1000V. **Input Impedance:** Approx. 100 megohm on 200 mV, approx. 1000 megohm on 2 V, 10 megohm on all other ranges. **Accuracy:** ±0.2% ±1 digit with furnished DC calibrator, ±0.1% ±1 digit with lab calibration. **Normal Mode Rejection:** 35 dB minimum @ 60 Hz. **Common Mode Rejection:** 80 dB minimum with 1k unbalance @ 60 Hz. **OHMMETER — 6 Ranges:** 200 ohms with 1 mA test current, 2k with 100μA, 20k with 10μA, 200k with 10μA, 2M with 1μA, 20M with 100nA. **Accuracy:** With DC calibrator, ±0.5% ±1 digit on 200, 2k, 20k, 200k ranges; ±1.5% ±1 digit on 2M and 20M ranges. With lab calibration, ±0.5% ±1 digit on 200 ohm range; ±0.25% ±1 digit on 2k, 20k, 200k; ±1% ±1 digit on 2M and 20M. **AC VOLTMETER** (Average responding, rms calibrated) — **5 Ranges:** 20 mV, 2 V, 20 V, 200 V, 1000 V. **Input Impedance:** 1 megohm @ 150 pF. **Accuracy:** With DC calibrator, ±0.75% ±1 digit for 40Hz-10kHz, ±1% ±1 digit for 10kHz-20kHz on 200 mV and 2V ranges: ±0.75% ±1 digit for 40Hz-5kHz, ±1.5% ±1 digit for 5kHz-10kHz on 20V and 200V ranges: ±1.5% ±1 digit for 40Hz-7.5kHz on 1000V range. **DC AMMETER — 5 Ranges:** 200μA, 2mA, 20mA, 200mA, 2A. **Voltage Drop:** 0.2V (nominal). **Accuracy:** With DC calibrator, ±0.5% ±1 digit for 2A, ±3% ±1 digit on all other ranges. With lab calibration, ±0.25% ±1 digit for 2mA and 20mA; ±0.3% ±1 digit for 200mA; ±0.5% ±1 digit for 2A. **AC AMMETER** (40Hz-10kHz) — **5 Ranges:** 200μA, 2mA, 20mA, 200mA, 2A. **Voltage Drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±1.5% ±1 digit on 2A, ±1% on all other ranges. With lab calibration, ±0.75% ±1 digit on 200μA, ±0.7% ±1 digit on 2mA and 20mA; ±0.8% ±1 digit on 200mA; ±1 digit on 2A. **GENERAL — Display:** Maximum count, 1999. **Power Requirement:** 120 or 240 VAC, 60/50 Hz, 8 W nominal. **Operating Temperature:** 10°C-40°C. **Size:** 3" H x 7" W x 7.9" D.

Precision VOM's, Line Voltage Monitor

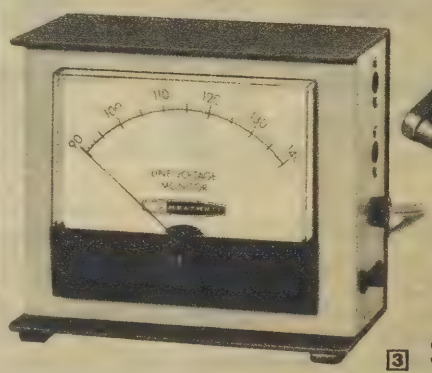
Heath Test Instruments have won the confidence of thousands the world over. No matter what your electronic testing need, there's a Heath Instrument that will do it for you, and do it better.



1 **$94.95**



2 **$64.95**



3 **$19.95**



4 **$29.95**

1 Heathkit FET taut-band VOM — ten megohm input in a portable meter

A portable lab-grade FET VOM combining accuracy, versatility, convenience and ruggedness — in an easy-to-build dollar-saving kit! Our IM-104 has low-drift 1% precision metal film and wirewound resistors for exceptional stability. Nine DCV & ACV ranges measure from .01V to 1000V. Six current ranges cover 0.001 mA to 1000mA, DC & AC. Seven resistance ranges from 1 ohm to 100 megohms, conventional or low voltage modes. Decibel ranges from —40 dB to +62 dB. DC null scale with better than 1 mV resolution. The 4½" ruggedized, taut-band meter is diode protected, built to take plenty of abuse. Built-in circuitry shows battery condition at the flip of the range selector. Three evenings put this great portable VOM on your bench.

Kit IM-104, Shpg. wt. 4 lbs. **94.95**

Assembled SM-666, has additional 1μA current range, less 100 & 1000 mA ranges, Shpg. wt. 4 lbs. **149.00**

IM-104 SPECIFICATIONS

DC VOLTMETER — 9 ranges: 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. **Input resistance:** 10 megohm. **Accuracy:** ±2% of full scale (meter in horizontal position). **AC rejection:** Accuracy not affected by impressed 60 Hz sine wave with rms value 2x greater than full-scale value. **Null indicator:** On 0.1, 1, 10, 100, 1000V, meter zero level may be adjusted to center of null referenced scale. Null variations of approx. 1% of full-scale can be resolved. **AC VOLTMETER — 9 ranges:** 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. **Range factor:** 1 to 3.162 (10 dB) per step. **Input resistance:** 10 megohm. **Input capacity:** 100 pF typical. **Accuracy:** ±3% of full scale (meter in horizontal position; 60 Hz sine wave). **Response:** Average value of ½ sine wave. Scale calibrated to indicate rms. **Frequency response:** 20 Hz to 20 kHz ±3%, 20 Hz to 50 kHz ±5% on 0.1 to 30 V, 20 Hz to 10 kHz ±3%, 20 Hz to 20 kHz ±5% on 100 and 300 V. 20 Hz to 1.0 kHz ±3%, 20 Hz to 2.5 kHz ±5% on 1000 V. **DC MILLIAMMETER — 6 ranges:** 0-0.01, .1, 1, 10, 100, 1000V mA. **Voltage drop (approx. full scale):** 0.100 V on 0.01 to 10, 0.150V on 100, 0.350 V on 1000. **Insertion resistance:** Voltage drop divided by full-scale current. **Accuracy:** ±2% on 0.01 to 100, ±3% on 1000. (Meter in horizontal position.) **AC MILLIAMMETER — 6 ranges:** 0-0.01, 0.1, 1, 10, 100, 1000 mA. **Voltage drop (approx. of full scale):** 0.100 V on 0.01 to 1, 0.150 V on 100, 0.350 on 1000 V. **Insertion resistance:** Voltage drop divided by full scale. **Accuracy:** ±3° on 0.01 to 100, ±4% on 1000. (Meter in horizontal position; 60 Hz sine waves.) **Response:** Average value of ½ of sine wave (DC current must be negligible). Scale calibrated to include rms. **Frequency response:** 20 Hz to 5 kHz ±3% on 0.01, 20 Hz to 20 kHz ±3% on 0.1, 20 Hz to 50 kHz ±3% on 1 to 1000. **OHMMETER — 7 ranges:** Rx1 (10 ohm center scale), Rx10, Rx100, Rx1k, Rx10k, Rx100k, Rx1M. **Accuracy:** ±3% on x10 to 1M. **Test voltage (nominal):** 1.55V on +DC/ohm and —DC/ohm, 0.085 V on ohm. **DB RANGE — 9 ranges (0 dB = mV into 600 ohm):** —40 to —18, —30 to —8, —20 to +2, —10 to +12, 0 +22, +10 to +32, +20 to +42, +30 to +52, +40 to +62. **Accuracy:** ±3 dB @ —20 dB to ±0.3 dB @ +28. **Meter protection:** will sustain momentary overload of 220 VAC or DC on any range, diode and 2A fuse protected on ohms x1 and 0.01 to 100 mA, FET protected on 0.1 to 100 V and ohms x10k to ohms x1M. Internal circuitry protected against improper battery installation. Diode protected meter. **Amplified circuit:** Dual FET source followers driving operational amp. **Operating temperature:** 0 to 50°C. **Storage temperature (less batteries):** —40 to +80°C. **Batteries (not supplied):** 1 1.5 V D-cell (NEDA #13). 4 1.5 V AA-cell (NEDA #15). **Dimensions:** 6.95" H x 4.95" W x 2.25" D.

2 Heathkit taut-band general-purpose VOM

It's an easy, enjoyable one-evening kit — build-up two modular circuit boards and you have it. This highly versatile IM-105 gives you a low-friction, taut-band meter with diode & fuse protected movement. Fuse in-line with the input connector is removable from front for extra convenience. Other professional features include calibrating controls, DC polarity switch, self-storing handle.

Kit IM-105, Shpg. wt. 3 lbs. **64.95**

Assembled SM-660, (less 5 KV ranges), Shpg. wt. 4 lbs. **72.00**

IM-105 SPECIFICATIONS

DC VOLTAGE RANGES: —0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. **Accuracy:** ±3% of full scale. **Input resistance:** 20,000 ohms/V full scale. **AC VOLTAGE RANGES:** —2.5, 10, 50, 250, 500 V, 1 kV & 5 kV full scale. **Accuracy:** ±4% of full scale. **Input resistance:** 5000 ohms/V. **Input capacity:** Less than 20 pF. **Frequency response:** 2.5, 10, and 50 V ranges: ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz. **DC CURRENT RANGES:** —0.05, 1.0, 10, 100, 500 mA & 10 A full scale. **Accuracy:** ±3% of full scale. **Voltage drop:** Approximately 0.25 V at full scale. **RESISTANCE RANGES:** —x1 (20 center scale), x10, x100, x1k, x10k. **Accuracy:** ±3 degrees of arc. **Source voltage:** x1 through x1k ranges: 1.5 V x 10k range: 15 V. **DECIBEL RANGES:** (0 dB = 1 mW in 600 ohms): —10 to +56 dB. **GENERAL** — **Operating temperature range:** 0-55° C. **Batteries (not supplied):** One 1.5V "D" cell (NEDA #13). One 15V (NEDA #208). **Dimensions:** 7" H x 5" W x 2¼" D.

3 Heathkit Line Voltage Monitor

Improper line voltage can cause poor operation of test equipment and circuits. With the solid-state IM-103, you always know what your line voltage is. When calibrated from a source of known accuracy, the IM-103 has an accuracy of ±2%.

Kit IM-103, Shpg. wt. 3 lbs. **19.95**

IM-103 SPECIFICATIONS

Voltage range: 90 VAC (rms) — 140 VAC (rms). **Voltage accuracy (sine wave):** ±2% when calibrated with a known line voltage. **Power requirement:** 90-140 VAC, 50-60 Hz, 4.2 W. **Dimensions:** 5⅛" H x 6¼" W x 3" D.

4 Heathkit IM-17 — everyman's VOM

The perfect buy for homeowners, hams, servicemen, hobbyists, modelers — everyone. All solid-state with FET input for less circuit loading, better accuracy than ordinary VOMs. Portable battery operation, zero and ohms adjust, accessory probe jack. DC polarity switch, three test leads, easy 3-5 hour assembly. Less batteries.

Kit IM-17, Shpg. wt. 4 lbs. **29.95**

IM-17 SPECIFICATIONS

DC VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scales. **Input resistance:** 11 meg. on all ranges. **Accuracy:** ±3% of full scale. **AC VOLTMETER — Four ranges:** 0-1, 10, 100, 1000V full scale. **Input resistance:** 1 meg. on all ranges. **Accuracy:** ±5% of full scale. **Frequency response:** ±1 dB, 10 Hz to 1 MHz. **OHMMETER — Four ranges:** RX1, RX100, RX10k, RX1M. **Input resistance:** 1 meg. on all ranges. **Dimensions:** 5⅜" H x 9⅜" W x 9" D.

Heathkit performance specifications are guaranteed.

Get more for your counter dollar at Heath



12 Volt Operation
Rear panel connector permits use of any 12-volt DC power source. A mating connector is supplied with the kit.

Overrange Indicator
Indicates when the number to be displayed is larger than the display can handle.

POWER/TIME BASE Switch
Turns the IM-4100 on, selects between kHz and MHz for frequency measurements, and selects second or millisecond time bases for period measurements.

Gate Lamp
Flashes on when the display is updated. Also functions as a logic probe (see right) for trouble-shooting during calibration or servicing.

Reset Switch
Pushbutton switch resets the display to zero in any mode of operation.

Input Attenuator
Three-position switch provides ÷1, ÷10 or ÷100 attenuation of the input signal.

Three Operating Modes
Modes for frequency measurement to 30 MHz, period measurements to 99.999 seconds, or totalize for events counting to 99,999 are easily switch-selected.

Our most versatile counter — frequency to 30 MHz, period to 99.999 seconds, events to 99,999.

Sensational counter value! It's a full five-digit frequency counter with period and totalize modes. As a frequency counter, it's guaranteed to 30 MHz with 1 Hz resolution. In the period mode, it measures intervals up to 99.999 seconds. Using the millisecond time base, it resolves to 1 msec! The totalize mode will add up (totalize) event pulses up to a count of 99,999. Pushing the RESET button starts the count at zero. An inhibit signal stops the totalize mode at any time, without loss of the displayed count. Front panel attenuator switch allows the amplitude of input signals to be divided by 1, 10 or 100. Front panel display includes overrange indicator and a gate lamp. A rear panel switch selects internal or external time base. The rear panel connector can be used as an input for the external time base signal, or as an output to check the internal 10 MHz time base or provide a convenient frequency standard of 1 MHz for bench use. Operates from any 12 VDC source. And the IM-4100 is easy to build thanks to the open circuit board layout. A simple gate light modification gives you a handy logic probe for trouble-shooting should problems arise.

Kit IM-4100, Shpg. wt. 7 lbs. **129.95**

IM-4100 SPECIFICATIONS

FUNCTIONS — Frequency: 5 Hz to 30 MHz. **Period:** 1 μsec resolution to 99.999 sec. **Totalize:** 1-99,999 events. **INPUT — Frequency Range:** 5 Hz to 30 MHz minimum. **Sensitivity:** 15 mV rms (50 mV, 5 Hz to 50 Hz). **Period Pulse Width:** 25 nsec minimum. **Low Frequency Signal Risetime:** 1 msec for signals less than 10 Hz. **Input Impedance:** 1 megohm shunted by less than 35 pF. **Protection:** 240 volts rms at 60 Hz. **Attenuator:** X1, X10, X100 fixed compensation. **TIME BASE — Frequency:** 10 MHz. **Setability:** ±1 ppm. **Temperature stability:** ±10 ppm, maximum 0° to 40° C ambient. **OSCILLATOR CONNECTION — External Input Frequency:** DC to 20 MHz. **External Input Sensitivity:** TTL or 2.5 V rms from 50-ohm source. **Internal Output:** TTL signal at 1 MHz. **GENERAL — Gate Interval:** kHz-1 sec, MHz-1 msec. **Manual Gate:** DC control in events mode using external OSC input connector. **Display Time:** 200 msec plus gate interval. **Power Requirements:** 105-130 or 210-260 VAC (switch-selected). 60/50 Hz, (at 25 watts); or 9-14 VDC at 1.25 amperes. **Dimensions:** 2¾" H x 7¼" W x 10½" D (less handle).



$349.95

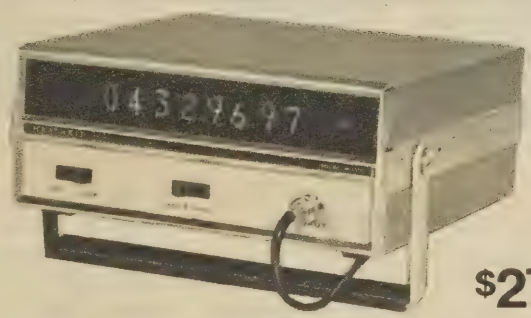
180 MHz Counter with phase-locked multiplier

Features 1 Hz to 180 MHz range, pushbutton selection of x1, 10, 100 or 1000 multiplier for resolution down to 0.001 Hz. Pushbutton selection of 1 msec, 100 msec and 1 second gate times for variable resolution readings. Input for external clock. Has 8-digit cold-cathode display plus range, overrange, gate and loop-unlocked indicators, separate AC and DC coupled inputs, 120/240 VAC primary.

Kit IB-1103, Shpg. wt. 12 lbs. **349.95**

IB-1103 SPECIFICATIONS

FREQUENCY MEASUREMENTS — Range: 1 Hz to 180 MHz. **Accuracy:** ±count ±time base stability. **Readout:** MHz, kHz, or Hz with correctly positioned decimal. **Impedance:** 1 megohm in parallel with 35 pF. **Overload:** Diode-protected input circuit. **TIME BASE — Crystal frequency:** 4 MHz TCXO (Temperature Compensated Crystal Oscillator). **Stability:** Aging rate ±1 ppm/yr. **FREQUENCY MULTIPLIER — Ranges versus input frequency:** x1: No multiplier (direct counting). x10: 100 Hz to 300 kHz. x100: 10 Hz to 100 kHz. x1000: 10 Hz to 10 kHz. **EXTERNAL TIME BASE INPUT — Frequency:** 1 MHz with stability greater than 10^{-7}. **Input impedance:** 1000 ohms. **Maximum input:** 3 V rms. **Power requirements:** 120/240 VAC, 60/50 Hz. **Dimensions:** 3⅝" H x 8⅝" W x 9¼" D.



$279.95

8-digit, 120 MHz Counter

Offers 120 MHz range with 50 mV sensitivity, FET input, automatic triggering. Eight-digit, cold-cathode readout plus lighted indicators for MHz, kHz, overrange and gate condition mean resolution down to 1 Hz for frequencies up to 99.999 MHz...10 Hz resolution for frequencies over 100 MHz.

Kit IB-1102, Shpg. wt. 12 lbs. **279.95**

IB-1102 SPECIFICATIONS

FREQUENCY MEASUREMENTS — Range: 1 Hz to 120 MHz. **Gate Time:** 1 msec. or 1 sec. **Accuracy:** ±1 count ± time base stability. **Input Impedance:** 1 megohm in parallel with 35 pF. **TIME BASE — Crystal Frequency:** 4 MHz, TXCO (Temperature Compensated Crystal Oscillator). **Power requirement:** 120/220 VAC, 60/50 Hz, 30 W. **Connectors:** Two BNC's. Input on front panel; external clock on rear panel. **Dimensions:** 8⅝" W x 3⅝" H x 9¼" D.

Last call on IB-102 175 MHz Scaler!

SAVE $20 **$59.95** Reg. $79.95

While quantities last!

See previous catalogs for description.

There's a reliable Heath Power Supply for every



Digital & Analog Supplies

Four DC models — 0.7.5V @ 10A, 0-15V @ 5A, 0-30V @ 3A, 0-60V @ 1.5A. 3½-digit or 3½″ meter readout. Features include: Remote programming of voltage and current through rear panel connectors using external sources. Adjustable constant current and adjustable constant voltage modes. Remote voltage sensing capability. Output protection against short-circuit operation and accidentally applied voltages. Load protection against open remote-sensing leads.

Kit IP-2700, 60V analog,
Shpg. wt. 35 lbs. **169.95**

Assembled SP-2700, 60V analog,
Shpg. wt. 35 lbs. **255.00**

Kit IP-2701, 60V digital,
Shpg. wt. 37 lbs. **219.95**

Assembled SP-2701, 60V digital,
Shpg. wt. 37 lbs. **340.00**

Kit IP-2710, 30V analog,
Shpg. wt. 34 lbs. **169.95**

Assembled SP-2710, 30V analog,
Shpg. wt. 34 lbs. **255.00**

Kit IP-2711, 30V digital,
Shpg. wt. 36 lbs. **219.95**

Assembled SP-2711, 30V digital,
Shpg. wt. 36 lbs. **340.00**

Kit IP-2720, 15V analog,
Shpg. wt. 34 lbs. **169.95**

Assembled SP-2720, 15V analog,
Shpg. wt. 32 lbs. **255.00**

Kit IP-2721, 15V digital,
Shpg. wt. 36 lbs. **219.95**

Assembled SP-2721, 15V digital,
Shpg. wt. 34 lbs. **340.00**

Kit IP-2730, 7.5V analog,
Shpg. wt. 36 lbs. **169.95**

Assembled SP-2730, 7.5V analog,
Shpg. wt. 34 lbs. **255.00**

Kit IP-2731, 7.5V digital,
Shpg. wt. 38 lbs. **219.95**

Assembled SP-2731, 7.5V digital,
Shpg. wt. 36 lbs. **340.00**

IP/SP-2700 SERIES SPECIFICATIONS

(NOTE: Specs measured in accordance with NEMA standards (PYI-1972) after 30-minute warmup period.)

Max. Rated Output: Models IP/SP-2700 & 2701: 60V, 1.5A; models IP/SP-2710 & 2711: 30V, 3A; models IP/S-2720 & 2721: 15V, 5A; models IP-2730 & 2731: 7.5V, 10A. **Load Regulation:** Voltage ± 0.05% +1 mV, Current: ±0.10% + 3.5 mA. **Line Regulation:** Voltage: ± 0.05% + 1 mV. Current: ±0.10% + 1 mA. **Ripple & Noise:** Voltage: 1 mV RMS; 0.03% of rated output, peak-to-peak. **Voltage/Current Readout (Switchable):** Analog: 3½″, 100°, meter, Digital: 3½-digit (1999), two-decade, auto-ranging, digital meter. **Readout Accuracy:** Voltage: Analog — ±3% of rated output; Digital — ±0.5% of reading ± 1 count using lab standards, ±1.0% of reading ± 1 count using built-in calibrator. Current: Analog — ±3% of rated output; Digital — ±1.0% of reading ± 4 count using lab standards, ± 1.5% of reading ± 4 count using built-in calibrator. **Readout Response Time: (Digital):** 2 seconds to within 5 counts. **Stability at Output Terminals:** Voltage: ± (0.01% + 1 mV)/hr. Current: ± (0.05% + 1 mA)/hr. **Stability as Displayed (Digital):** Voltage: ± (0.01% + 1 mV + ½ count)/hr. Current: ± (0.01% + 1 mA + ½ count)/hr. **Operating Modes:** Constant voltage, constant current, auto-series, auto parallel. **Programming Mode:** Voltage: A—zero to rated output with 0 to 5.0 VDC applied; B—zero to rated output with 0 to 5000 Ω external resistor. Current: Zero to rated output with applied voltage of 1.0 volt/amp (0.1 volt/amp for IP-2731). Frequency Response: DC to 100 Hz, ± 2 dB. Programming Transient Response: 0.1 ms for low current to high current changes: 1.0 ms for high to low. Load resistance less than 10 x (E_{Rated}/I_{Rated}). **Power Requirements:** 120/240 ± 10/20 VAC; 60/50 Hz, 2.0/1.0 Amps max. **Overall Dimensions:** 5.5″ H x 15″ W x 13.5″ D.

Heathkit performance specifications are guaranteed.

voltage range, every price range



$109.95

Heathkit IP-5220 Variable Isolated AC Supply

- ***Safe isolated source of AC power for service work***
- ***Variable 0-140 VAC output***
- ***1 A & 3 A ammeter ranges for easy low-current readings***
- ***Simultaneous metering of voltage and current output***

Every service tech and hobbyist needs a Heathkit IP-5220. With this new variable AC source, you can isolate transformerless equipment for safer operation when servicing. It provides complete isolation between the AC power line and any electrical equipment that is plugged into its front panel variable output socket. The variable 0-140 volt output is useful anywhere a slow run-up of line voltage is needed...like the initial turn-on of that new breadboard you've been building.

A full 360 volt-amperes of AC power is available at the front panel variable output socket. More than enough to operate equipment with large power requirements, such as a color TV. And the IP-5220 is capable of supplying its full rated output continuously.

The IP-5220's ability to start from zero voltage is helpful when trying to locate circuit faults caused by high or low line voltage — or testing equipment with unknown power requirements. You simply monitor the output on the large voltmeter and ammeter as output voltage is increased. When excessive current is observed, power can be quickly and easily removed before components are damaged.

For easier low current measurements, the ammeter has two switch-selected full scale ranges of 1 A and 3 A. Fuses for both ranges are front panel mounted for easy replacement. The variable output socket is fused to protect the IP-5220 and the circuit under test in case of a short circuit. A socket for direct line connection is front panel mounted for convenience.

Kit IP-5220, Shpg. wt. 27 lbs. **109.95**

IP-5220 SPECIFICATIONS

Input Voltage: 120 V @ 60 Hz for specified output. **Output Voltage:** 0-140 V @ 60 Hz. **Voltmeter Range:** 0-150 VAC. **Ammeter Ranges:** 0-1 & 0-3 A, AC. **Output Current:** 3 A max. 10 A (direct line connection). **Output Power:** 360 Volt-Amperes maximum. **Dimensions:** 5.5″ H x 15″ W x 10.5″ D.



Learn more about power supplies

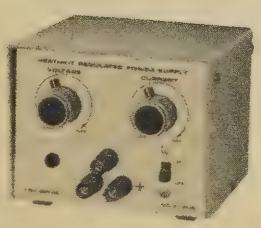
Regulated Power Supplies — covers static & dynamic characteristics, regulation techniques, use of integrated circuits, and more. **EDP-152** **5.50**

See page 48 for book-ordering information.



FOR FASTEST SERVICE — USE THE HEATHKIT HOTLINE!
(616) 982-3411 day or night

1-15 VDC regulated supply



Output continuously adjustable from 1-15 VDC with 50 mV load and line regulation...*and* adjustable current limiting from 10 mA to 500 mA. AC or DC programming capability. Three-terminal floating output.

Kit IP-18, Shpg. wt. 5 lbs. **24.95**

Assembled SP-18A, Shpg. wt. 5 lbs...**50.00**

IP-18 SPECIFICATIONS

Ripple and Noise: Less than 5 mV. **Current Output:** 500 mA maximum continuous load. **Current Limiting:** Adjustable from 10 mA to over 500 mA. **Transient Response:** 25 microseconds. **Output Impedance:** .5 ohm or less to 100 kHz. **Power Requirements:** 120/240 VAC, 60/50 Hz, 15 W at full load. **Dimensions:** 4⅜″ H x 5½″ W x 5¾″ D. **Programming:** AC or DC, 5000 ohm input resistance.

Heathkit IP-17 0-400 VDC general-purpose supply



A versatile supply for experimenters and service techs. Provides 0-400 VDC at 0-100 mA cont., 125 mA int. And a great general purpose supply for the physics or chemistry lab.

Kit IP-17, Shpg. wt. 21 lbs. **94.95**

Assembled SP-17A, Shpg. wt. 21 lbs. **160.00**

IP-17 SPECIFICATIONS

Additional Outputs: 0 to —100 VDC at 1 mA variable bias voltage, 6.3 VAC at 4 amps., 12.6 VAC at 2 amps. (25 VA max. AC load), filament voltage. **Regulation:** Output variation less than 1% from no load to full load. **Ripple:** Less than 10 millivolts rms. **Output Impedance:** Less than 10 ohms, DC to 1 MHz. **Meters:** Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 mA. **Power Requirements:** 120/240 VAC, 60/50 Hz, 150 W max. **Dimensions:** 5⅛″H x 13¼″ W x 11″ D.

There's a Heathkit Generator for every lab,



Kit **$109.95**

Assembled **$150.00**

HEATH charg-a-kit REVOLVING CHARGE

provides up to 20 dB additional attenuation for each step for total attenuation of 70 dB. Attenuator accuracy is ±1 dB. Frequency accuracy is ±3%. Nonlinearity of the triangle waveform is 5% maximum, with waveform symmetry within 10%. Square wave rise and fall times are 100 nsec maximum. 105-130 or 210-260 VAC operation. A triggered oscilloscope such as the IO-4530 (see page 64) is necessary for calibration.

Kit IG-1271, Shpg. wt. 7 lbs. **109.95**

Assembled SG-1271, wired version of the IG-1271 in same attractive blue & white styling (not shown), Shpg. wt. 7 lbs. **150.00**

This low-cost function generator delivers sine, square & triangle waveforms from 0.1 to 1 MHz

Combines wide frequency range, compact size and reliable Heath engineering in a low-cost generator. All controls are located on the front panel for convenient operation.

The Heathkit IG-1271 generates sine, square or triangle waveforms over a frequency range of 0.1 Hz to 1 MHz. The large tuning control allows fast and precise control of frequency over a 100:1 range. The six-position Frequency Multiplier is the only other control needed to set any frequency. The short-circuit-proof output amplifier supplies a 10 volt peak-to-peak signal into a 50-ohm load. A calibrated step attenuator adjusts from 0 to 50 dB (10V p-p to 30 mV p-p) in 10 dB steps. The variable attenuator control

IG-1271 SPECIFICATIONS

Frequency range: 0.1 Hz to 1 MHz. **Frequency accuracy:** ±3% of full scale on dial. **FUNCTIONS: Triangle waveform:** Nonlinearity, 5% maximum. Symmetry within 10% of 50% duty cycle. **Square waveform:** 100 nanosecond maximum rise or fall time. Symmetry within 10% of 50% duty cycle. **Sine waveform:** Harmonic distortion; 3% max., 5 Hz to 100 kHz. **Power requirements:** 105-130 volts or 210-260 volts rms, 60/50 Hz. 15 watts max. **Dimensions:** 3″ H x 7¼″ W x 8⅞″ D.



1 2 3

1 Heathkit Audio Intermodulation Analyzer

- ***Ideal for critical IM distortion checks on stereo and 4-channel components***

Three audio test instruments in one. An AC VTVM, wattmeter and IM analyzer are combined in one compact package. High and low signal sources are built in for IM tests. Noninductive load impedance of 4, 8, 16 and 600 ohms are switch-selected. 120/240 VAC, 60/50 Hz, 20 W. Measures 9½″ H x 13″ W x 7″ D.

Kit IM-48, Shpg. wt. 13 lbs. **94.95**

2 Heathkit Harmonic Distortion Meter

- ***Excellent low-cost meter for service and repair shops, lab work, hobby bench***

Operating convenience was a prime consideration in the design of the Heathkit IM-58. Harmonic distortion measurements can be made quickly and easily. Measures harmonic distortion as low as 1% full scale from 20-20,000 Hz. Measures noise down to —60 dBm. 120/240 VAC, 60/50 Hz, 30 W. 8½″ H x 13″ W x 7″ D. Requires audio generator such as the IG-72 (page 53) for alignment.

Kit IM-58, Shpg. wt. 13 lbs. **79.95**

3 Heathkit Stereo Generator

Provides audio or composite stereo signal for multiplex adapter adjustments...RF carrier modulated by these signals for tuner & receiver adjustments...phase test function for subcarrier transformer adjustment...a variable level crystal-controlled 19 kHz pilot signal for checking receiver lock-in ranges...plus built-in sweep and marker signals for RF & IF alignment. Other features include switch-selection of 400 Hz, 1 kHz, 5 kHz, 19 kHz, 38 kHz and one of two SCA frequencies...test leads included.

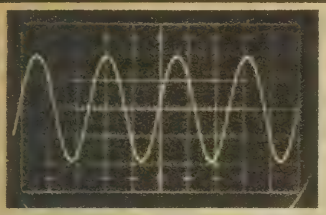
Kit IG-37, Shpg. wt. 12 lbs. **99.95**

IG-37 SPECIFICATIONS

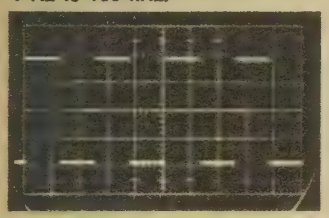
RF signal frequency: 100 MHz adjustable by approx. ±2 MHz. **Pilot modulating frequency:** 19 kHz ±2 Hz. **FM modulation:** Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase). Monophonic FM. **Deviation:** Adjustable to 75 kHz. **Sweep rate:** (used for RF and IF alignment) 60 Hz. **Sweep width:** (used for RF and IF alignment). Adjustable to 750 kHz. **RF attenuator range:** 60 dB in 20 dB steps. **Crystal-controlled markers:** 10.7, 90.95, 96.30, 96.30, 101.65 & 107 MHz. **Composite signal output:** Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). **Audio output:** 400, 1000 & 5000 Hz; 10 kHz (±2 Hz); 38 kHz & SCA (65 or 67 kHz). **Distortion:** (At 400, 1000 & 5000 Hz), Less than 5%. **Power requirements:** 120/240 VAC, 50/60 Hz, 35 W. **Dimensions:** 5½″ H x 13½″ W x 9″ D.

Charge a kit — no money down on any kit — see page 50 for details.

every test bench, every application



Sine wave...distortion is 0.1% from 10 Hz to 20 kHz. Range is 1 Hz to 100 kHz.



Square wave...rise time is less than 50 nanoseconds. Overall frequency range is 5 Hz to 100 kHz.



Kit $84.95 **Assembled $130.00**

The Heath IG-18 Sine & Square Wave Generator offers low cost, portability

Sine wave signals are available from 1 Hz to 100 kHz with distortion less than 0.1% from 10 Hz to 20 kHz. Eight output ranges from 0.003 to 10 V are provided when operating into a high impedance (10 k ohm min.) external load. Six ranges from 0.003 to 1 V are available when operating into the internal 600 ohm load or external load. A meter monitors the sine wave output, and is conveniently calibrated in both volts and dB. Square wave output is available from 5 Hz to 100 kHz with peak-to-peak output levels of 0.1, 1 and 10 V into a load of 2000 ohms or greater. Risetime is 50 nanoseconds. Frequency is selected using front panel switches for 0-100, 0-10, and x1, 10. 100 and 1000 multipliers. A separate vernier control is provided for the 0-1 range. Output is available simultaneously or independently. Dual primary transformer for 120 or 240 VAC operation.

Kit IG-18, Shpg. wt. 12 lbs. **84.95**

Assembled SG-18A, wired version of the IG-18 in black & white styling, Shpg. wt. 10 lbs. **130.00**

IG-18 SPECIFICATIONS

SINE WAVE OUTPUT: Output voltage: 8 ranges, 0.003 to 10 V rms (full-scale) with 10 k ohm or higher external load. 6 ranges, 0.003 to 1 V (full scale) with 600 ohm internal or external load. **dB ranges:** —62 dB to +22 dB, —12 dB to +2 dB on meter and —50 to +20 dB on amplitude switch in 10 dB steps. +2 dB max. into 600 ohm load. (0 dB = 1 mW in 600 ohm). **Output variation:** +1 dB 10 Hz to 100 Hz. **Output indications:** Two voltage and one dB scale on meter. **Output impedance:** 10 V range: 0-1000 ohm; 3 V range: 800-1000 ohm; 1 V range and lower; 600 ohm. **Meter accuracy:** ±10% of full scale with proper load termination. **SQUARE WAVE OUTPUT: Output voltage (peak-to-peak):** .1; 1, 10 V into 2000 ohm load or higher. **Output impedance:** .1 V and 1 V ranges: 52 ohm; 10 range: up to 220 ohm. **Power requirements:** 105-125 or 210-250 VAC, 60/50 Hz, 6 watts.

These Heathkit Generators make servicing and testing a breeze. Put one on your bench!

1 Heathkit Precision RF Generator

The IG-42 provides 100 kHz to 30 MHz signals with ±3% adjustable frequency calibration. RF output voltage adjusts from 5 to 100,000 μV in five attenuated steps, with 10:1 variable attenuation. Output can be modulated from 0-50% with 5% accuracy. 120/240 VAC, 60/50 Hz. 8½" H x 13" W x 7" D.

Kit IG-42, Shpg. wt. 15 lbs. **97.95**

2 Heathkit Low Distortion Audio Generator

Get nearly perfect sine-wave signals with the Heathkit IG-72. Distortion is less than 0.1% from 20 to 20,000 Hz. Switch selects frequencies from 10 Hz to 100 kHz, meter monitors output in volts and dB to within ±5% from 10 Hz to 100 kHz. 120/240 VAC, 60/50 Hz, 40 W. 6½" H x 9½" W x 5" D.

Kit IG-72, Shpg. wt. 8 lbs. **64.95**

Assembled SG-72A, wired version of the IG-72 in black & white styling, Shpg. wt. 9 lbs. **100.00**

3 Heathkit General Purpose RF Generator

The Heathkit IG-102 is an accurate, stable source of modulated or unmodulated RF signals. It covers 100 kHz to 100 MHz in 6 bands (100-200 MHz on harmonics) with 2% tuning accuracy. Internal signal modulation is 400 Hz and a 100 Hz audio output is provided for audio tests. 120/240 VAC, 60/50 Hz. 9½" H x 6½" W x 5" D.

Kit IG-102, Shpg. wt. 6 lbs. **44.95**



The perfect companion to your Heathkit Generator...

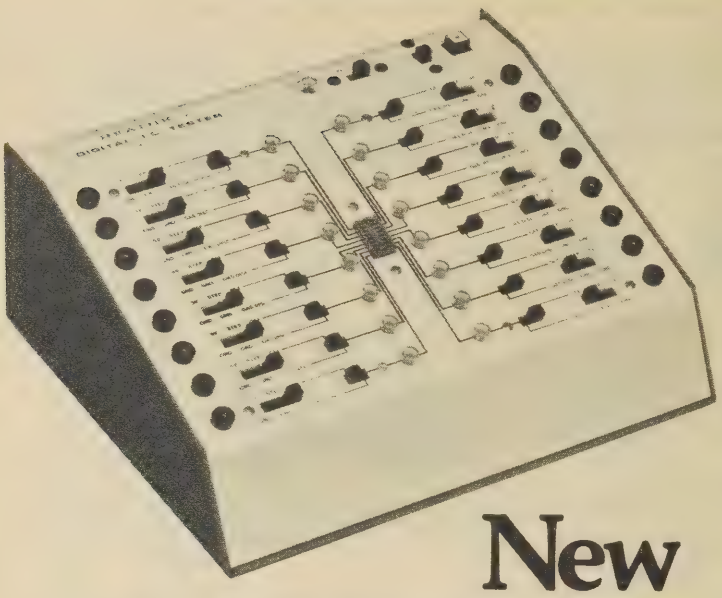
101 Ways to Use Your Square-Wave & Pulse Generators, describes basic tests for r-c circuits, audio amplifiers, video amplifiers, inductive circuits, TV if amplifiers, rf/if amplifiers, stereo fm units, and r-c coupled amplifiers.

EDP-189 ..... **3.50**

See page 48 for book-ordering information.

Need probes and cables? See our complete selection on page 62.

Famous Heathkit Test Equipment Makes Any



Heathkit IT-7400 Digital IC Tester adds amazing versatility to any hobby or test bench

- ***"Zero Force" Insertion Socket prevents bent pins on IC's***
- ***No-bounce keyboard Mercury Switch allows stepping of more complex IC's***

A "must" for anyone working with the latest digital IC's. Lets you determine functions of unknown IC's, check operation of IC's against your own data sheets. Features a special high-quality "zero-force" insertion socket — the same as used in expensive production-line testers — that lets you make thousands of insertions and extractions without worrying about bent pins. An exclusive Heath "bounce-free," computer-type mercury stepping switch allows safe and easy "exercising" of multi-function IC's such as flip-flops. Has input-output jacks for each pin; easy-to-read neon indicators. Exceptionally easy to operate — 14- or 16-pin IC's can be installed in any position, switches and banana jacks allow each IC pin to be used as input or output. Ideal for use with the Heathkit ILP Digital Electronics Course (page 88).

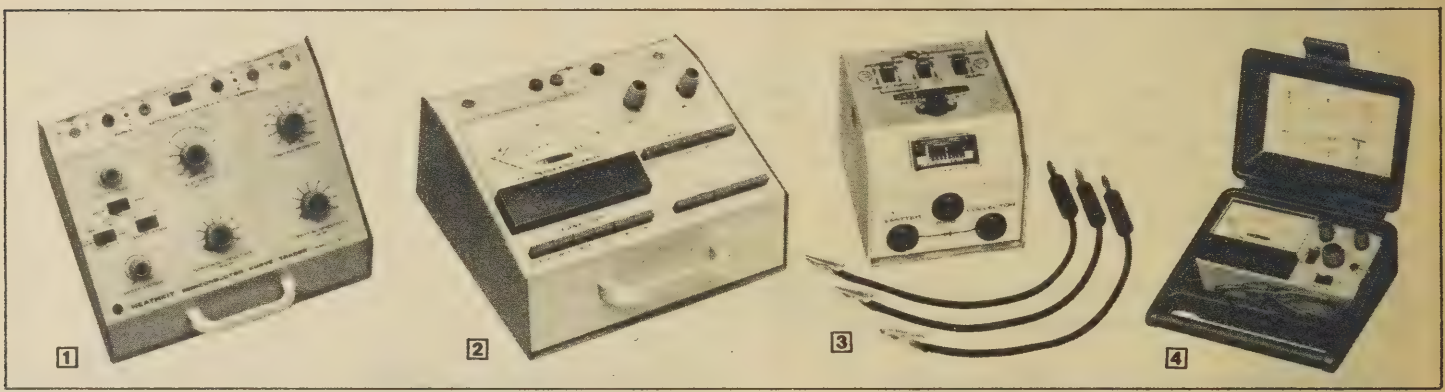
Kit IT-7400, Shpg. wt. 7 lbs. **74.95**

New

- ***Tests Latest Digital IC's — RTL, DTL, TTL, ECL, CMOS, others***
- ***Checks functions of simple gates to complex TTL***
- ***Direct testing of gas discharge driver IC's***
- ***Checks 7-segment LED's with 16-pin IC spacing***

IT-7400 SPECIFICATIONS

Pin Arrangement: accepts 14 or 16-pin dual-in-line IC's. **Indicator Lamps:** 17 neon lamps, one at each pin, plus ON indicator. **Stepping Circuit:** mercury switch with zero bounce stepping into any pin selected. **Pull-up Resistors:** externally connected, with patch terminals. **Patch Terminals:** one at each pin. **Selector Switches:** two at each terminal, one for +5V, step, or off; the other for gas discharge or ground. **Gas Discharge:** allows direct driving of neon indicator lamp for high voltage decoder driver. **Power Supply:** 5 VDC regulated, ±5%, 300 mA and 3.6 VDC, switch selected. **Power Requirement:** 100-135/200-270 VAC, 60/50 Hz, switch selected. **Dimensions:** 4⅝″ H x 11⅜″ W x 9¼″ D.



1 IT-1121 Curve Tracer

For oscilloscopes with horizontal sensitivity of 0.5 V/div. and vertical sensitivity of 1 V/div. Displays parameters for virtually any discrete semiconductor — bipolar transistors, diodes, SCRs, triacs, FETs, etc. Plug-in cables are supplied for easy scope hookup. Switch permits fast and accurate scope calibration. Displays gain (beta), leakage, breakdown voltage saturation, forward conduction voltage, output admittance, linearity, capacitance effects, temperature effects and others.

Kit IT-1121, Shpg. wt. 11 lbs. **94.95**

IT-1121 SPECIFICATIONS

Sweep Voltage Ranges: 0-40 volts at 1 ampere max. 0-200 volts at 200 mA max. **Sweep Voltage Sampling:** .1, .2, .5, 1, 2, 5, 10, 20 and 50 V/div. ±3%. **Sweep Current Sampling:** .5, 1, 2, 5, 10, 50, 100 and 200 mA/div. ±3%. **Step Currents:** .002, .005, .01, .02, .05, .1, .2, 2, 5, and 10 mA/step, ±3%, ±250 nA offset current max. **Step Voltages:** .05, .1, .2, .5, and 1 volt/step, +3%, ±5mA maximum offset voltage. **Calibration Source:** 9 volts ±2% in 1 volt steps. **Oscilloscope Requirements:** Bandwidth to 20 kHz or greater. (DC-coupled oscilloscope is recommended). **Power Requirements:** 110 to 130 or 220 to 260 VAC. **Dimensions:** 4½″ H x 11¼″ W x 10″ D.

2 FET/Transistor Tester

Reduce your service time with quick, accurate tests of conventional (bipolar) transistors, diodes, FETs, SCRs, triacs and unijunction transistors. Either in-circuit using color-coded test leads supplied or out-of-circuit using built-in sockets. Read gain (DC Beta), transconductance (Gm) and leakage directly. Special circuitry balances out in-circuit impedances. Five current ranges measure leakage to 1 μA and collector currents to 1 A.

Kit IT-121, Shpg. wt. 6 lbs. **62.95**

IT-121 SPECIFICATIONS

DC Beta: 1 to 5000 in ranges of 1 to 50, 5 to 250, 10 to 500, 50 to 2500, 100 to 5000. **Collector Currents Available:** 1 mA, 5 mA, 10 mA, 100 mA, 500 mA, and 1 A. **Gm:** 0 to 50,000 μmhos. **Leakage Measurements:** Five ranges, 0 to 100 μA, 0 to 1 mA, 0 to 10 mA, 0 to 100 mA, 0 to 1 A. **Out-of-Circuit Accuracy:** ±5% for DC beta and leakage. **In-Circuit Accuracy:** Indicates good or bad transistor, FET, diode, SCR or triac. **Diode Test:** Tests for forward conduction and blocking. **Unijunction Transistor Test:** Measures Ieb_2s, Ib_2b_2s and emitter current **Power Requirement:** Two 1½ V cells, (alkaline for best performance), not supplied. **Dimensions:** 5″ H x 9$^{7}/_{16}$″ W x 8⅛″ D.

3 Transistor/Diode Checker

Checks high and low power transistors (NPN & PNP) for shorts, leakage, opens and current gain, diodes for forward and reverse current and serves as a continuity checker. Uses two 1.5 V "C" cells, not supplied. 3⅛″ H x 3⅛″ W x 3¾″ D.

Kit IT-27, Shpg. wt. 2 lbs. **10.95**

4 IT-18 Transistor Tester

For reliable in- or out-of-circuit tests. The large, easy-to-read meter permits direct reading of DC Beta (gain) on two ranges, 2-100 and 20-1000. Makes out-of-circuit leakage measurements for transistors and diodes, range μA. Identifies NPN or PNP transistors. Low power circuit will not damage transistor or diode incorrectly connected. Not for use with high power or switching transistors.

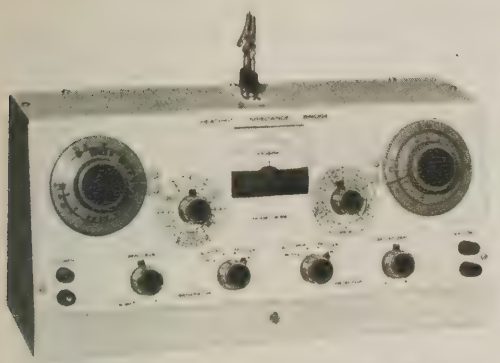
Kit IT-18, Shpg. wt. 4 lbs. **32.95**

IT-18 SPECIFICATIONS

Out-of-Circuit Accuracy: ±5%. **In-Circuit Accuracy:** Indicates good or bad. **Iceo** — 0-5000 μA; **Icho** — 0-5000 μA. **Diodes:** Forward or reverse current — 0-5000 μA. **Power:** One standard "D" cell (not supplied). **Dimensions:** 4½″ H x 8½″ W x 7⅛″ D.

Need probes and cables? See our complete selection on page 62.

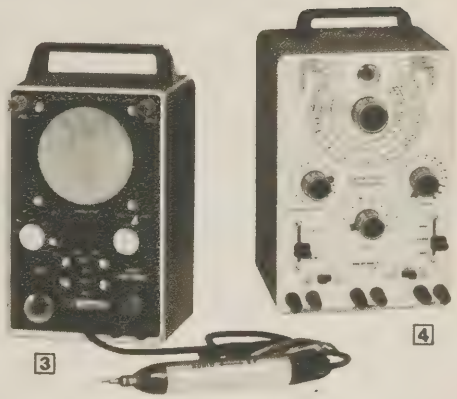
Service or Hobby Bench More Professional



1 $109.95



2 $99.95



3 4

1 Impedance Bridge

Has four separate bridge circuits for accurate measurement of resistance, capacitance, and low & high inductance. Requires headphones or scope for alignment.

Kit IB-28, Shpg. wt. 11 lbs. **109.95**

IB-28 SPECIFICATIONS

DC Measurements: Built-in power supply. Binding posts for external supply. **Meter:** 100-0-100 microampere meter. **AC Measurements:** Built-in 1000 Hz generator. Terminals on panel for external generator. **Detector:** Vacuum tube detector and amplifier, using built-in meter. Terminals for external detector. **Resistance:** 0.1 ohm to 10 megohm. **Capacitance:** 100 pF to 100 μF. **Inductance:** 0.1 mH to 100 H. **Dissipation Factor:** (D) 0.002 to 1. **Storage Factor:** (Q) 0.1 to 1000. **Accuracy:** ½% decade resistors used. **Tube Complement:** (2) 1U4, (2) 1L4. **Power Supply:** Transformer and silicon rectifier. **Power Requirements:** 105-125 V. or 210-250 V., 60/50 Hz, 10 watts. **Dimensions:** 8″ H x 17″ W x 6″ D.

2 Low-cost Tube Checker

Tests tubes on the basis of total emission, for shorts, leakage, open elements, and filament continuity.

Kit IT-17, Shpg. wt. 12 lbs. **99.95**

Updated Tube Chart Subscription Service for all Heathkit Tube Checkers includes new chart plus two supplements per year for only $6.20. Write: Heath Tube Data Service, P.O. Box 377, Hewlett, Long Island, New York 11557.

IT-17 SPECIFICATIONS

Sockets: 4-pin, 5-pin, 6-pin combination and pilot light. 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. **Meter:** 1 mA BAD-?-GOOD scale, illuminated. **Line Voltage Adjustment:** Step type. **Roll Chart Mechanism:** Constant tension, free-rolling, thumbwheel operation, illuminated. **Filament Voltage:** .63, 1.4, 2, 2.35, 2.5, 3.15, 4.2, 4.7, 5, 6.3, 7.5, 9.45, 12.6, 19.6, 25, 32, 50, 70, 110 VAC. **Element Test Voltages:** 30, 100, 250 VAC. **Power Requirements:** 120 VAC, 50/60 Hz. **Dimensions:** 8½″ H x 13″ W x 5½″ D.

3 Visual-aural Signal Tracer

Trace RF, IF and audio signals; locate noisy or intermittent components. Has 3½-inch speaker, bright eye-tube indicator. Audio/RF probe included. 7½″ H x 4½″ W x 4″ D.

Kit IT-12, Shpg. wt. 6 lbs. **32.95**

4 Direct-reading Capacitor Checker

Fast, accurate analysis of all capacitor types. No calculations — just read directly from front-panel scales. Measures capacitance from 10 pF to 1000 μF, resistance from 5 ohms to 50 megohms and 16 leakage testing voltages. Terminals for external standard L, C or R measurements. External audio generator may also be used.

Kit IT-28, Shpg. wt. 7 lbs. **52.95**

IT-28 SPECIFICATIONS

Test Circuit: AC bridge, powered by internal 60 Hz supply or partial external audio generator with 10 V output. **Upper Frequency Limit:** 10 Hz. **Capacitance Ranges:** 10 pF to .005 μF, .001 μF to .5 μF, .1 μF to 50 μF, 20 μF to 100 μF. External standard (comparison bridge; maximum ratio 25:1). **Inductance Check:** External standard only. **Power Requirements:** 120/240 VAC 60/50 Hz, 30 W. **Dimensions:** 9⅝″ H x 6⅝″ W x 5″ D.



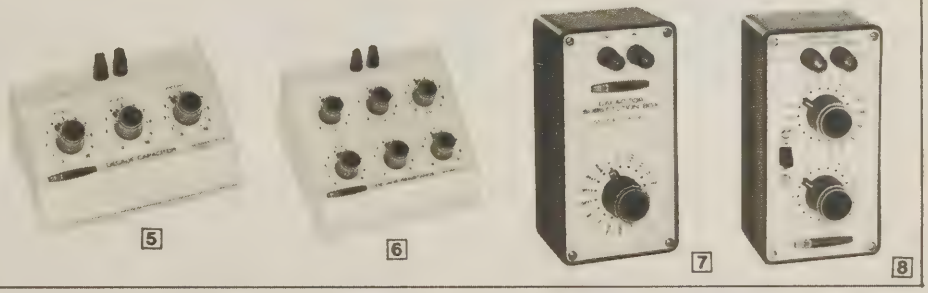
Get more out of your Heathkit test instruments with these valuable books.

Know Your Tube and Transistor Testers — a comprehensive source of information on design & applications of tube & transistor testers. **EDP-147,** **3.50**

Tube Substitution Handbook — lists over 12,000 direct replacements for all types of domestic & foreign receiving & picture tubes. **EDP-174,** **2.25**

Transistor Substitution Handbook — contains substitutions for over 100,000 bipolar transistors. **EDP-175,** **4.50**

See page 48 for book ordering information.



5 6 7 8

5 Decade Capacitance Box

Selects 100 pF to 0.111 μF in 100 pF steps. Ideal for use with the IN-17 in solving R and C network problems.

Kit IN-27, Shpg. wt. 3 lbs. **26.95**

IN-27 SPECIFICATIONS

Voltage Rating: 350 VDC continuous; 500 VDC intermittent; 100 VDC instantaneous test. **Accuracy of Incremental Capacity:** ±1%. **Stray Capacitance:** 10 to 15 pF at terminals. **Dimensions:** 4″ H x 7⅛″ W x 5″ D.

6 Decade Resistance Box

1 ohm to 999,999 ohms in 1-ohm steps. Resistors are 1-watt, ½% accuracy.

Kit IN-17, Shpg. wt. 4 lbs. **39.95**

IN-17 SPECIFICATIONS

Minimum DC Resistance: .025 ohms or less at terminals with all switches at zero. **Dimensions:** 5″ H x 7½″ W x 6⅝″ D.

7 Capacitor Substitution Box

18 EIA standard capacitors from 100 pF to 0.22 μF. Rated at 600 V except 3 lowest and 2 highest values are 500 & 400 V respectively. 5⅜″ H x 3⅛″ W x 3″ D.

Kit IN-47, Shpg. wt. 2 lbs. **10.95**

8 Resistor Substitution Box

15 ohms to 10 megohms. 36 EIA standard 10% 1- watt resistors. 5⅜″ H x 3⅛″ W x 3″ D.

Kit IN-37, Shpg. wt. 2 lbs. **10.95**

Heathkit Test Equipment—world-famous

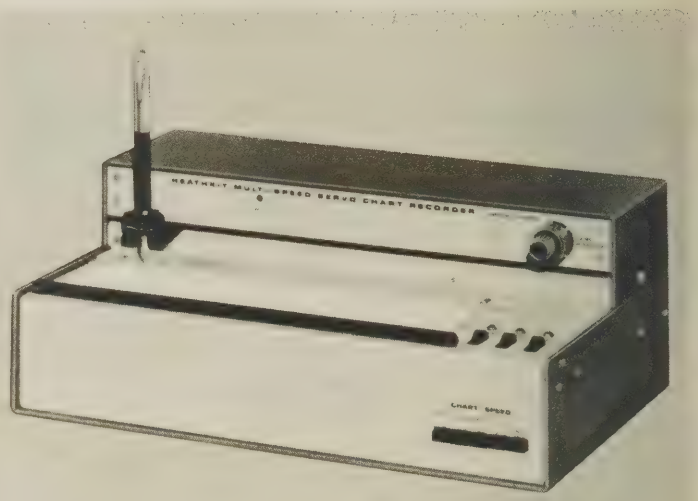
Declare Your Independence

HEATH charg-a-kit REVOLVING CHARGE

Heathkit Strip Chart Recorder

Kit $189.95

Assembled $265.00



Two input ranges permit accurate voltage measurements to 1 mV or 10 mV full scale (selected during assembly). High input impedance prevents circuit loading. Floating input is useful when source and recorder have different ground potentials. Twelve chart speeds from 5 sec./in. to 200 min./in., all pushbutton selected. Chart motor drive circuitry is synchronized with the line frequency for accurate speeds. The pen holder accepts many different types of pens (a standard cartridge-type fountain pen is supplied). Multi-colored plots are made by changing pens. Paper width is 10", marked 0-100 right to left. The tip-back-top makes paper loading fast and easy. For slow chart speeds (100 sec./in. or longer), SU-445-17 chart paper is recommended.

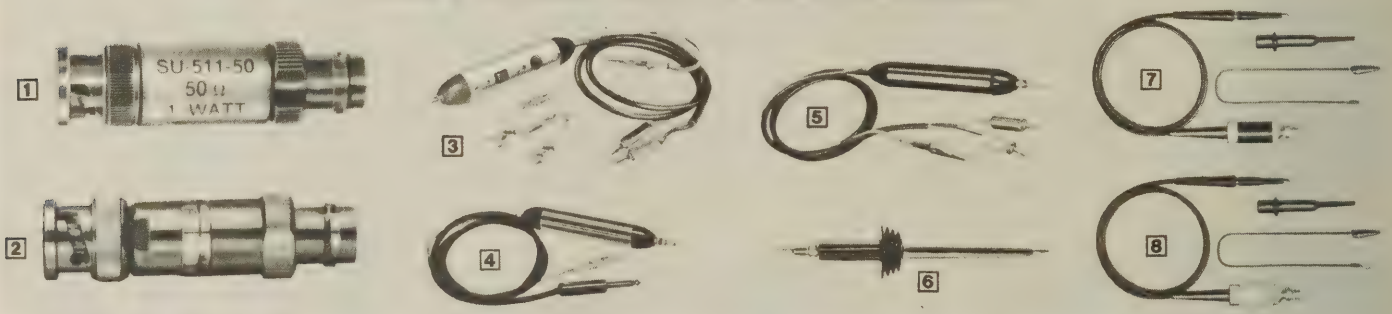
Individual POWER, SERVO and CHART switches operate the servo mechanism and chart drive independently. Coarse and fine zero position controls. Reference voltage supply is zener-regulated. Other features include a light-operated modulator for comparison of input and reference voltages and a gearless servo drive system.

Kit IR-18M, Shpg. wt. 15 lbs. **189.95**
IRA-18-1, 3 rolls chart paper (140 ft./roll), Shpg. wt. 5 lbs. **10.95**
SU-445-17, chart paper, 120 ft. roll, Shpg. wt. 2 lbs. **4.75**
SR-201A Chart Recorder, factory assembled and calibrated, wired for 10 mV full scale input, Shpg. wt. 15 lbs. **265.00**

IR-18M SPECIFICATIONS

Chart Paper: Grid width, 10". Length, 140 ft. roll. Markings, 0-100 right to left. **Chart Speed:** 12 speeds, pushbutton selected. 5, 10, 50, 100, 200 sec/inch and 5, 10, 20, 50, 100, 200 min/inch. **Balancing time:** Approximately 0.1 sec/inch, 1 second full scale (10"). **Input circuit:** Self-balancing potentiometer. **Input resistance:** Essentially infinite at null. **Line frequency rejection:** (input shorted). 130 dB in common mode. **Floating input:** +100 VDC maximum with respect to ground. **Overall error:** Less than 1% of full scale. **Maximum recommended source resistance:** 100 k ohms. **Power requirement:** 120/240 VAC 60 Hz, 14W or 120/240 VAC, 50 Hz, 16 W. **Dimensions:** 6" H x 15" W x 9⅛" D.

Probes & accessories for Heathkit instruments



1 50-ohm Termination for frequency counters and scopes. DC to 1 GHz; power rating, 1 watt. VSWR: 250 MHz, 1.2:1; 600 MHz, 2:1.
Assembled SU-511-50, Shpg. wt. 1 lb. **15.00**

2 RF Fuse in UHF BNC-to-BNC connector. Prevents accidental burnout of devices sensitive to RF power. DC to 500 MHz range; 50 ohms impedance; 12.1 VSWR (max.); insertion loss 1.80 dB max. at 500 MHz. Spare fuses included.
Assembled SU-512-50, Shpg. wt. 1 lb. **45.00**

3 Low capacitance scope probe provides direct or X10 attenuated operation; options for 3.3 or 1 megohm input resistance.
Kit PK-1, Shpg. wt. 1 lb. **5.95**

4 Etched circuit RF probe for RF measurements from 1000 Hz to over 100 MHz; 11 meg input; 1000 VDC max. at tip; 90 V rms max.
Kit PK-3, Shpg. wt. 1 lb. **5.95**
Assembled PKW-3, Shpg. wt. 1 lb. **7.95**

5 Scope demodulator probe for distortion checks and display of RF & IF signal modulation. Functions as an AM detector, 30 V rms max., 500 VDC max.
Kit 337-C, Shpg. wt. 1 lb. **5.00**

6 High frequency compensated scope probe features DC-60 MHz bandwidth; 10 megohm/11.5 pF input impedance; compensation for any 1 megohm/15-40 pF scope input; X10 attenuation; 500 V AC & DC rating. Ideal for use with IO-104, IO-4510 and IO-4530 scopes.
Assembled PKW-101, Shpg. wt. 1 lb. **26.95**

PKA-101-1 Accessory Pack...consists of the most commonly lost or damaged parts of the PKW-101. Includes three assembled tips, two 6-inch ground leads and one 12-inch ground lead.
PKA-101-1, Shpg. wt. 2 lbs. **9.95**

7 Direct (X1) scope probe for scopes, frequency counters or checking waveforms and levels in any low impedance circuit. 1 megohm/30 pF input impedance. 600 V AC & DC rating. Range 17 MHz typical. Rise time 17 nsec. typical. BNC connector.
Assembled PKW-104, 2 lbs. **21.95**

8 30 kV High Voltage Probes...IMA-100-10 Probe multiplies DC ranges of any 10-megohm meter by 100. 1000 megohm input measures voltages as low as 1 V in high-impedance circuits. Banana plug connector.
Kit IMA-100-10, Shpg. wt. 2 lbs. **10.95**

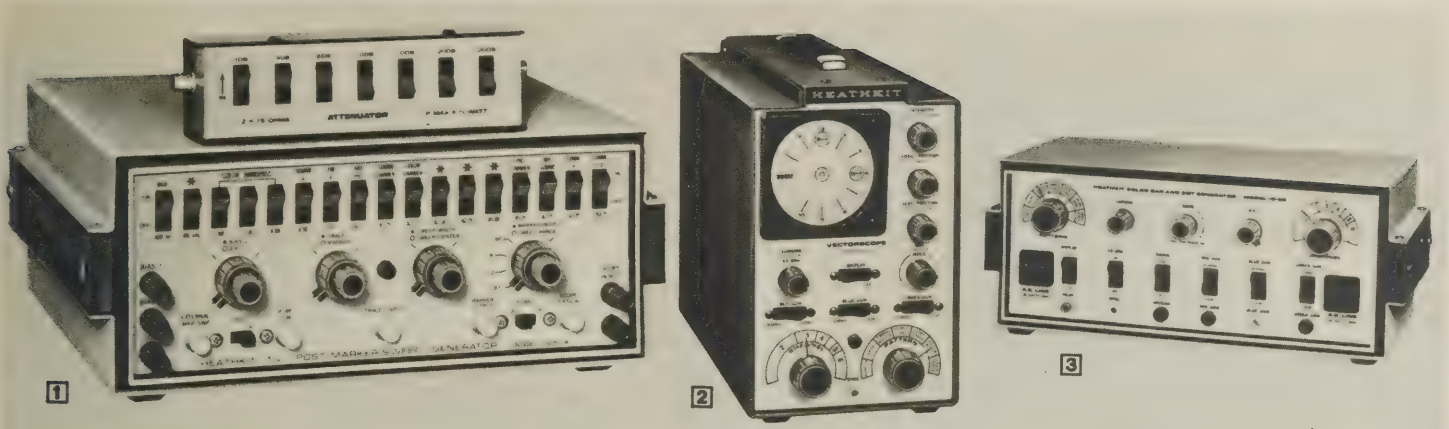
IMA-100-11 Probe provides X100 measurement capability for meters with 11-megohm input impedance. Phone plug connector with alligator ground clip. Available kit or assembled.
Kit IMA-100-11, Shpg. wt. 2 lbs. **10.95**
Assembled SMA-100-11, Shpg. wt. 2 lbs. . . . **13.95**

IMA-1000-1 Probe provides X1000 attenuation for meters with 1-megohm input impedance. Banana plug connector.
Kit IMA-1000-1, Shpg. wt. 2 lbs. **10.95**

Accessory cables...for inter-connecting instruments such as scopes, counters, etc. All cable is RG-58A/U, 50 ohm impedance. Shpg. wt. (each), 1 lb.
Assembled SU-501-1, 1 ft., BNC/BNC. **7.50**
Assembled SU-501-3, 3 ft., BNC/BNC. **7.50**
Assembled SU-501-6, 6 ft., BNC/BNC. **7.50**
Assembled SU-502-3, 3 ft., BNC/UHF. **7.50**
Assembled SU-503-3, 3 ft., BNC/Banana **7.50**

Want faster service? Order by phone — call (616) 982-3411 day or night.

for accuracy and reliability



1 Heath Post-Marker/ Sweep Generator

Kit $164.95 **Assembled** $275.00

The Heathkit IG-57A checks overall receiver response from the antenna terminals throughout the tuner, IF strip video detector, to the color bandpass amplifier outputs. Sweep modulated picture carriers are available at 45.75 MHz for the tuner mixed input and at 67.25 MHz for the antenna terminal input. And the exclusive Heath external attenuator enables you to accurately set bandwidth in seconds...eliminates guessing at important 6 dB points. Fifteen crystal-controlled markers are provided...four for color bandpass...one for FM-IF...eight for TV IFs from 39.75 to 47.25 MHz...plus picture and sound carrier markers for channels 4 and 10. Accurate location of picture and sound carriers, 6 dB points and trap locations is a breeze with the IG-57A. Three sweep oscillators in stable Colpitts configurations produce five ranges using harmonics for color bandpass, FM IF, video IF bandpass, VHF channels 4 & 10.

Kit IG-57A, Shpg. wt. 15 lbs. **164.95**

Assembled SG-57A, factory-assembled & calibrated version of the IG-57A in handsome black & white styling (not shown), Shpg. wt. 16 lbs. **275.00**

IG-57A SPECIFICATIONS

Marker frequencies: crystal-controlled: 3.08, 3.58, 4.08, and 4.50 MHz ±0.1%. 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, 67.25 and 193.25 MHz ±.005%. **Modulation frequency:** 400 Hz. **Input impedance: External Marker/Sweep, and Attenuator** — 75 ohms. Trace in — 220 k ohms. **Output impedance:** Marker Output, Sweep Output, and Attenuator — 75 ohms. Scope Vert. — 1 k ohms. **Bias voltage:** Two individually adjustable supplies: Positive or negative polarity. **Type of marker:** Birdie. **Controls:** Bias controls, Marker / Trace — dual concentric; Sweep Width / Sweep Center — dual concentric; Marker Out — concentric with Sweep Range switch; and Phase. **Switches:** Rocker type — separate switch for each of the above listed frequencies. Blanking, On/Off. **Sweep frequency ranges and output voltage:** LO Band — 2.5 to 5.5 MHz ±1 dB at 0.5 volts rms (min.) fundamentals, and 10.7 MHz on harmonics. IF Band — 38 to 49 MHz ±1 dB, at 0.5 volts rms (min.) fundamentals. RF band — 64 to 72 MHz ±1 dB at 0.5 volts rms (min.) fundamentals and 192 to 198 MHz on harmonics. **Attenuator:** Total of 70 dB of attenuation in seven steps — 1 dB, 3 dB, 6 dB, 10 dB, 10 dB, 20 dB and 20 dB. **Power requirement:** 120 V, 60 Hz AC at 4.5 watts.

2 Heathkit Vectorscope/ Color Generator

Kit $144.95

Two necessary instruments in one: a 3 inch vectorscope...and a color bar/pattern generator. The vectorscope displays the ten color bars generated, amplified and demodulated by the color receiver circuitry...accurately represents the chroma signal being fed to the CRT guns. Indicates missing or weak colors, proper adjustment of the burst phase transformer, 3.58 MHz oscillator, reactance coil, bandpass transformer, color demodulation angle. A grid-cathode switch displays all vector patterns the same way, regardless of how CRT is driven.

The color bar/pattern generator provides 12 patterns plus a raster for purity adjustments in either the familiar 9x9 display or the exclusive Heath 3x3 format. Features tuning for channels two through six, RF output variable to 50,000 μV for composite signal injection into receiver antenna terminals, plus or minus going video signals for composite signal injection behind the video detector, front panel sync output, 4.5 MHz crystal controlled sound carrier, lead-piercing grid jacks and front panel gun shorting switches.

Kit IO-101, Shpg. wt. 12 lbs. **144.95**

IO-101 SPECIFICATIONS

PATTERNS — Purity: Produces a snow-free raster for purity adjustments. **Dots*:** 9x9 produces a display of 110 small dots. 3x3 produces a display of nine dots. **Crosshatch*:** 9x9 produces a display of 11 vertical and 10 horizontal lines. 3x3 produces a display of three vertical and three horizontal lines. **Horizontal lines*:** 9x9 produces a display of 10 horizontal lines. 3x3 produces a display of three horizontal lines. **Vertical lines*:** 9x9 produces 11 vertical lines. 3x3 produces a display of 3 vertical lines. **Color bars*:** 9x9 produces a display of ten standard color bars. A visual fingerprint (voltage pattern) of all ten color bars in the form of a petal pattern is displayed for color circuit servicing. **Gray scale:** Provides a wide bar crosshatch pattern with six shades of brightness. **OUTPUT SIGNALS — Video:** Greater than ±1 volt peak-to-peak composite signal for composite signal injection beyond the video detector. **Sync:** Greater than 3.5 volts peak-to-peak signal for sync circuits without video, or sets having separate video and sync demodulator phase adjustments. **Power requirement:** 105-125 or 210-250 VAC, 60/50 Hz, 20 Watts. **Dimensions:** 9¼" H x 6¾" W x 14½" D.

*The number of dots, lines, and bars indicated for a 9x9 display is the number displayed if the receiver under test has no overscan.

3 Versatile Color Bar Pattern Generator

Kit $94.95 **Assembled** $155.00

The IG-28 provides 12 patterns plus a clear raster for purity adjustments, and patterns are available in the exclusive Heath 3x3 display or the familiar 9x9. Has RF output for channels 2 through 6, variable up to 50,000 μV for antenna terminal input, variable plus and minus going video for injection behind the video detector, front panel gun shorting switches and lead piercing grid jacks, front panel sync output, 4.5 MHz sound carrier oscillator, two front panel 500W AC receptacles.

Kit IG-28, Shpg. wt. 8 lbs. **94.95**

Assembled SG-28A, factory assembled & calibrated version of the IG-28 in handsome black & white styling (not shown), Shpg. wt. 10 lbs. **155.00**

IG-28 SPECIFICATIONS

Output signals: Video — Greater than ±1 V peak-to-peak composite signal. RF — Variable to 50,000 μV output, channels 2 through 6. Sync. — Greater than 3.5 V peak-to-peak signal. Control Grids (3) — Individual red, blue, and green control grid signals for viewing chroma signal demodulator phase adjustments. **Power supply:** full wave zener diode regulated. Input — 120/240 VAC, 60/50 Hz. Output — 3.6 VDC, 500 mA, zener diode regulated. **Dimensions:** 5½" H x 13½" W x 8" D.

Boost your TV service efficiency and profits with Heathkit test gear and these valuable books



How to Use Vectorscope—Oscilloscopes & Sweep-Marker Generators—trouble-shooting & alignment techniques; how to isolate defective ICs and transistors.
EDP-142 .....**5.95**

How to Use Color TV Test Instruments—get the most out of your investment in test gear.
EDP-138 .....**5.95**

See page 48 for book ordering information.

Better value and performance

- ***Superior performance and benefit/features you just won't find on comparably-priced scopes***
- ***Open chassis design and precision engineering assure you of easy assembly and calibration***



Kit or Assembled



Kit or Assembled

Our best scope — dual-trace, DC to 15 MHz, 1 mV sensitivity

The Heathkit IO-4510 has vertical delay lines, 45 MHz typical trigger bandwidth and a maximum sensitivity of 1 millivolt over full vertical bandwidth.

Digitally-controlled time base provides automatic triggering — no stability control is necessary. Baseline is generated when trigger signal is absent. Trigger Select switch and Level control precisely trigger time base at any point along + or − slope. The automatic position of level control triggers at zero crossing point.

Modes of display are selected by position control for each channel and Time Base switch. Either channel can be displayed as a function of time, or both can be displayed together chopped (200 kHz) or alternate modes automatically selected by time base switch. Time Base control provides 20 calibrated time bases from 0.2 sec/cm to 0.1 μsec/cm in 1, 2, 5 sequence, continuously variable between switch positions.

A line switch matches the regulated power supply to common line voltages from 100 volts to 280 volts AC. Major circuitry is contained on five circuit boards. And push-on connectors permit fast removal of any board. 6 x 10 cm CRT with illuminated graticule has post-deflection acceleration for brighter trace and faster writing speeds.

IO-4510 calibration requires precise source of square waves such as IOA-4510-1 on page 66 or IG-4505 on page 67.

Kit IO-4510, Shpg. wt. 34 lbs. **569.95**

SO-4510, factory assembled & calibrated version of IO-4510, Shpg. wt. 34 lbs. **775.00**

IO-4510 SPECIFICATIONS

VERTICAL: Deflection Factor: Sensitivity: 1 mV/cm to 5 V/cm in a 1-2-5 sequence. **Variable:** Continuous between steps to approx. 15 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 15 MHz. **AC Coupling:** 2 Hz to 15 MHz. **Rise Time:** 24 ns. **Overshoot:** <3%. **Delay Line:** Allows display of at least 20 ns of pre-triggered waveform. **Vertical Input: Impedance:** 1 MΩ shunted by ≈40 pF. **Maximum Input:** 400 V. **HORIZONTAL: Accuracy:** Within 3%. **Magnifier:** X5. **External: Sensitivity:** 0.2 V/cm (approx.). **Impedance:** 200 kΩ (approx.). **Frequency Response:** DC to 1 MHz. **TRIGGER: Internal: Automatic:** Zero crossing 0.5 cm. **Normal:** Adjustable over 8 division. **Slope Selection:** + or −. **External: Automatic:** Zero crossing ±0.2 V. **Normal:** Adjustable over ±5 V. **Slope Selections:** + or −. **Impedance:** 1 MΩ shunted by ≈30 pF. **X-Y: Y Channel:** Same as vertical. **X Channel:** Same as vertical, except response limited to 1 MHz and no delay line. **Phase Shift:** Less than 3° @ 100 kHz. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 6.4″ H x 12.9″ W x 19.3″ D (without handle).

Heathkit IO-4530...a fine general-purpose scope...perfect for TV service and home experimenting

Features like TV coupling, DC-10 MHz bandwidth, wide-band triggering capability, 10 mV/cm vertical input and calibrated X-channel input make it a versatile scope for the service technician or hobbyist. Y-input has maximum sensitivity of 10 mV with 11-position attenuator to set deflection from 10 mV/cm to 20 V/cm. For true X-Y operation, a calibrated X-input is provided with maximum sensitivity of 20 mV. Its calibrated 3-position attenuator provides three AC or DC ranges from 20 mV/cm to 2 V/cm. Trigger circuits are digitally controlled, requiring only a Level control and a Slope switch. In automatic, triggering is at the zero crossing point. In normal, the level control is adjustable over the complete 8 cm span. In the TV trigger coupling, the 4530 can be precisely triggered on the vertical signal in a complex TV signal. Calibration requires a source of square waves such as the IOA-4510-1 on page 66 or IG-4505 on page 67.

Kit IO-4530, Shpg. wt. 30 lbs. **299.95**

SO-4530, factory assembled & calibrated version of IO-4530, Shpg. wt. 28 lbs. **425.00**

IO-4530 SPECIFICATIONS

VERTICAL: Variable: Continuous between steps to approx. 50 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 10 MHz. **AC Coupling:** 2 Hz to 10 MHz. **Rise Time:** 35 ns. **Overshoot:** <5%. **Vertical Input: Impedance:** 1 MΩ shunted by ≈38 pF. **Maximum Input:** 400 V. **HORIZONTAL: Time Base: Ramp:** 0.2 S/cm to 200 ns/cm in decade sequence. **Variable:** Continuous between ranges to approximate 2 s/cm. **Accuracy:** Within 5%. **Magnifier:** X5. **External: Deflection Factor: Sensitivity:** 0.02 V/cm to 2 V/cm in decade sequence. **Variable:** Continuous between steps to approx. 20 V/cm. **Accuracy:** Within 3%. **Response: DC Coupling:** DC to 1 MHz. **AC Coupling:** 2 Hz to 1 MHz. **Rise Time:** 35 nS. **Overshoot:** <5%. **Input: Impedance:** 1 mΩ shunted by ≈40 pF. **Max. Input:** 400 V. **TRIGGER: Internal: Automatic:** Zero crossing ±0.5 cm. **Normal:** Adjustable over 8 divisions. **Slope Selection:** + or −. **External: Automatic:** Zero crossing ±0.03 V. **Normal:** Adjustable over 1.2 V. **Slope Selections:** + or −. **Impedance:** 1 MΩ shunted by ≈40 pF. **X-Y: Phase Shift:** Less than 5° @ 100 kHz. **GENERAL: CRT:** 5″ round. **Phosphor:** P31. **Graticule:** 8 x 10 cm. **Power:** 110-130/220-260 VAC, switch selected, 65 watts. **Operating Temperature Range:** 10°C to 40°C. **Dimensions:** 6.4″ H x 12.8″ W x 19.2″ D (without handle).

Charge a kit — no money down on any kit — see page 50 for details.

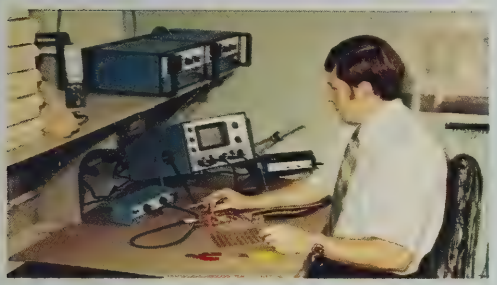
in scopes from the Heath labs



For Schools — an ideal student scope, easy to operate, easy to understand



TV Servicing — excellent for stage by stage troubleshooting



Lab Work — circuit design, testing components, checking assembly

New

A bright new dual-trace scope to round out your bench

Available Feb. 1976

The Heathkit IO-4550 brings you professional features at a low kit-form price



Kit or Assembled

Brighter trace and faster writing speed in our new 10 MHz dual-trace scope...kit or assembled.

Here's how extensive engineering research in the Heath lab pays off for our customers. Introducing our new IO-4550 10 MHz scope... at a price that will let you get it onto your bench for a lot less than other scopes with similar features.

Its broad base of applications is sure to make the IO-4550 appealing to anyone with a scope interest. Use it for TV and general electronics servicing, digital experimentation...even for your electronic design efforts.

The biggest news about the IO-4550 is that it features a brighter trace and faster writing speed than other 10 MHz scopes at a similar price...in fact, it's the brightest 10 MHz scope we've ever offered, so you're assured of an easy-to-read trace, even in high ambient light.

To maximize operational ease, input channels are displayed, chopped or alternate, as selected automatically by the Time Base switch. Exacting X-Y operation assures you of precise phase measurements.

The 4550's digitally-controlled time base circuitry provides automatic triggering, so no stability control is necessary and fewer adjustments are required. It also lets you determine the frequency of a waveform.

- ***A complete mu-metal shield is used in the IO-4550 to eliminate display error caused by electromagnetic interference***
- ***The fully-regulated high voltage supply allows accurate operation over widely-varying line voltages***
- ***All IC's are socketed for easy servicing and troubleshooting***

The fully regulated high voltage supply assures operation to specifications on standard line voltages from 100-270 volts. And a mu-metal shield prevents interference from stray magnetic fields.

Improved circuitry and only four epoxy glass printed circuit boards, with plug-in IC's, make the IO-4550 an easy-to-assemble kit. Establish a new standard for your test bench today...order the IO-4550. Calibration requires a precise source of square waves such as IOA-4510-1 on page 66, or IG-4505 on page 67.

Kit IO-4550, Shpg. wt. 31 lbs. **379.95**

SO-4550, factory assembled & calibrated version of IO-4550, Shpg. wt. 26 lbs. . . **525.00**

IO-4550 SPECIFICATIONS

VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. **Attenuator:** 11 steps in 1-2-5 sequence; **Variable:** Continuous between steps to approximately 60 V/cm. **Accuracy:** Within 3%. **Vertical Response: DC Coupling:** DC to 10 MHz. **AC Coupling:** 2 Hz to 10 MHz. **Rise Time:** 35 ns. **Overshoot:** Less than 5%. **Vertical Input: Impedance:** 1MΩ shunted by 38 pF. **Maximum Input:** 400 V. **HORIZONTAL: Time Base: Ramp:** 0.2 s/cm to 200 ns/cm. **Positions:** 19 steps in 1-2-5 sequence. **Variable:** Continuous between ranges to approximately 0.6 s/cm. **Accuracy:** Within 3%. **Magnifier:** X5 (adds additional 2% to sweep accuracy). **External: Sensitivity:** 0.1 V/cm (approx.). **Impedance:** 100 kΩ (approx.). **Frequency Response:** DC to 1 MHz. **Connector:** BNC. **TRIGGER: Internal: Automatic:** Adjustable over 10 divisions. **Normal:** Adjustable over 10 divisions. **Slope Selection:** + or —. **External: Automatic:** Adjustable over 0.8 V. **Normal:** Adjustable over 0.8 V. **Slope Selection:** + or —. **Impedance:** 1 MΩ shunted by 40 pF. **Connector:** BNC. **X-Y: Y Channel:** Same as Vertical. **X Channel:** Same as vertical except response is limited to 1 MHz. **Phase Shift:** Less than 8° @ 100 kHz. **GENERAL: CRT: Type:** 5" round. **Acceleration Potential:** 1.8 kV regulated. **Phosphor:** P-31. **Graticule:** 8 x 10 cm. **Power: Voltage Range:** 100-135 VAC/200-270 VAC switch selected, 70 watts at 120 VAC (240 VAC). **Internal Supplies:** Fully regulated. **Operating Temperature:** 10°C to 40°C. **Dimensions:** 6.9" H x 12.9" W x 19.3" (without handle).

Declare Your Independence

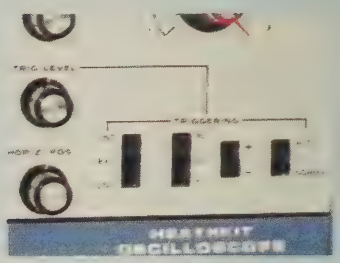
Great performance, low price make

DC-5 MHz scope for serviceman or hobbyist...kit or assembled





With Cycolac® case removed, all components are easily accessible for calibration and servicing.



Complete trigger controls include TV coupling for easy triggering on complex TV signals.

The Heathkit IO-4540 can quickly provide an accurate display of any waveform within its wide 5 MHz bandwidth — without the "fine tuning" required of the more expensive oscilloscopes in its performance class. The DC-5 MHz bandwidth and sensitive input make it ideal for servicing audio, TV and receiver circuitry.

A stable triggering circuit is used for solid waveform displays (not the recurrent type sweep generator normally used in scopes in its price range). Trigger controls include selection of normal or automatic modes, switch-controlled AC or DC coupling and front panel input for external triggering signals. The trigger selector control allows the 4540 to trigger on the vertical component of a complex TV signal.

Seven calibrated time bases from 200 ms to 0.2 μs/cm can be selected by the TIME/CM switch. Horizontal amplifier accepts inputs from DC to 100 kHz with 1 megohm input impedance. Vertical input sensitivity of 20 mV/cm and nine calibrated vertical attenuator positions up to 10 volts/cm accommodates a broad range of input signals. Variable gain for precise control between settings. Input impedance is 1 megohm shunted by 38 pF and will accept up to 400 VDC.

Regulated low-voltage power supplies provide stable voltages to all circuits under varying line voltage and load conditions. A sine-square wave generator is needed for calibration.

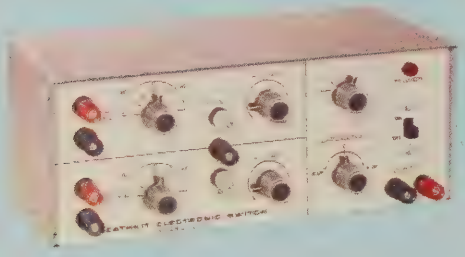
Kit IO-4540, Shpg. wt. 25 lbs. **179.95**

SO-4540, factory-assembled & calibrated version of IO-4540, Shpg. wt. 24 lbs. **275.00**

IO-4540 SPECIFICATIONS

VERTICAL: Bandwidth: DC to 5 MHz ±3 dB. **Attenuator:** 1, 2, 5 sequence, calibrated and variable. **Rise Time:** 70 ns. **Overshoot:** 5% at 1 kHz. **Impedance:** IMΩ/38 pF. **Sensitivity:** 20 mV/cm. **SWEEP: Type:** Triggered. **Range:** 200 ms — .2 μs, 7 steps plus variable. **Trigger Source:** Int/Ext/Line. **Trigger Modes:** AC/DC/TV; +/— Slope; Auto/Norm. **HORIZONTAL: Sensitivity:** .25 V/cm. **Bandwidth:** DC to 100 kHz. **Impedance:** 1MΩ/50 pF. **Ext. Horiz. Input:** X1 and X10 attenuator. **GENERAL: CRT:** 5DEP31F, 8 x 10 cm, green, medium-persistence phosphor, 5″ round, flat-face tube. **Accelerating Potential:** Approx. 1.5 kV. **Graticule:** Painted, 8 x 10 cm. **Power Requirements:** 110-130 VAC or 220-260 VAC, 50/60 Hz, 35 watts. **Dimensions:** 8″ H x 13″ W x 17″ D.

Heathkit Electronic Switch for greater 'scope versatility



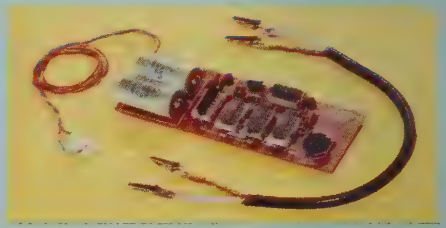
Let the ID-101 round out your test bench

Provides simultaneous display of two separate input signals by alternating between inputs. A sync output on each channel permits scope sweep to be locked to either input signal. DC coupling adds versatility. Frequency response — DC-5 MHz + 1½ dB, —3 dB.

Kit ID-101, Shpg. wt. 6 lbs. **44.95**

ID-101 SPECIATIONS

Signal gain: >10 times. **Maximum input signal:** 600 VDC or 600 VAC p-p. **Input impedance:** 1 megohm/50 pF. **Maximum signal output:** 8 V p-p. **Output loading:** 1000 ohm minimum. **Hum and noise:** (single channel only). <40 mV p-p. **Chopping rates:** Approx. 100, 500, 1000 and 5000 Hz. **Power requirements:** 120/240 V, 50-60 Hz, 6 W. **Dimensions:** 4¼″ H x 10⅜″ W x 5⅛″ D.



Oscilloscope Calibrator

The Heathkit IOA-4510-1 is an easy-to-build, easy-to-use crystal-controlled time base designed by Heath's 'scope engineers for oscilloscope calibration. It provides everything you need to accurately calibrate your new Heathkit IO-4510 or IO-4530. It generates a square wave signal with selected ranges from 1 MHz to 1 kHz at TTL output levels. The 1 kHz output level can be adjusted from 0 to 4.7 volts peak.

Kit IOA-4510-1, Shpg. wt. 1 lb. **14.95**

Charge a kit — no money down on any kit — see page 50 for details.

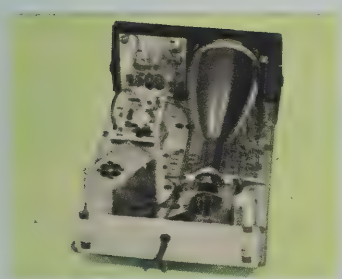
Heath scopes a better value

Lowest-priced auto-triggering scope anywhere... DC-5 MHz, 100 mV sensitivity

HEATH charg-a-kit REVOLVING CHARGE

The IO-4560 is the best instrument buy in years





The open chassis design of the IO-4560 makes it an easy kit to assemble — a great 'scope for student or home experimenter.

Now you can have the most universal of all test instruments on your bench — the oscilloscope — at a low kit form price. The 4560 permits study of complex signals, such as those found in audio devices, television receivers, transmitters and other electronic equipment. And operation couldn't be easier... in addition to the power switch, there are only nine switches and controls.

Auto-triggering provides automatic, positive locking of the displayed waveform. A stable display is assured for any frequency up to the full 5 MHz bandwidth. The uncalibrated sweep speed control provides continuous adjustment from 20 ms/cm to 200 ns/cm.

The DC to 5 MHz vertical bandwidth is more than adequate for general design and service work. Maximum vertical sensitivity is 100 mV with a front panel switch for X1, X10 and X100 attenuation, AC or DC. For phase and frequency measurements, an external horizontal input can be applied directly through the front panel input jack. It has 250 mV sensitivity with DC to 100 kHz bandwidth. Zener-regulated low voltage supplies assure display stability. The primary circuit of the power transformer is fused for protection from overload.

Kit IO-4560, Shpg. wt. 19 lbs. **119.95**

IO-4560 SPECIFICATIONS

VERTICAL CHANNEL: Input Impedance: 1 megohm. **Sensitivity:** 100 mV/cm. **Maximum Input Voltage:** 400 volts DC. **Frequency Response:** DC to 5 MHz ±3 dB. **Attenuator:** X1, X10, X100, AC or DC. **HORIZONTAL CHANNEL: Input Impedance:** 100 kΩ. **Sensitivity:** 0.25 volt/cm (uncalibrated). **Frequency Response:** DC to 100 kHz. **TIME BASE: Sweep:** 20 ms to 0.2 μs/cm (uncalibrated). **Trigger Mode:** Automatic. **GENERAL: CRT:** 5DEP31F, 8 x 10 cm viewing area. Blue-green, medium persistance phosphor. **Graticule:** 8 x 10 cm. **Power Requirements:** 110-130 or 220-260 VAC, 50/60 Hz 35 watts. **Weight Dimensions:** 8″ H x 13″ W x 17″ D.

Heathkit IG-4505 Oscilloscope Calibrator

It's no longer necessary to return your oscilloscope to the manufacturer for calibration. The IG-4505 is a practical oscilloscope calibrator at a sensible price. It provides all the waveforms necessary to adjust sweep speeds, vertical calibration, delay line terminations, high frequency compensation and attenuator compensation for oscilloscopes with bandwidths up to 35 MHz. Round out your test bench today... order the IG-4505.

Kit IG-4505, Shpg. wt. 4 lbs. **44.95**

Exceptional demand for the IG-4505 may delay shipment up to 60 days. Place your order now and we'll promptly assign you a priority number. You will be notified when to send payment.

IG-4505 SPECIFICATIONS

TIME CALIBRATION: Range: .5 sec. to 1 μs square wave in 1-2-5 sequence, accurate to within .01%. **Amplitude:** ≈ 200 mV peak. **Rise Time:** ≤4 ns. **Overshoot:** ≤3%. **Output:** 50 ohm terminated cable. **VOLTAGE CALIBRATION: Ranges:** 1 mV to 100V peak square wave in decade sequence. **Accuracy:** To within 2% with 1MΩ load referenced to 1V position. **Rise Time:** ≤2 μs. **Frequency:** DC, 2 Hz to 10 kHz in 1-2-5 sequence. **Accuracy of Internal Standard:** Within 1%. **Power Requirements:** 120-240 Volts AC, 50/60 Hz, 12 watts.





Understanding and using the Oscilloscope—details basic functions, circuits, inputs, pulses & waveforms; outlines every electronic test you're likely to make. **EDP-139** **4.95**

101 Ways to Use your Oscilloscope—practical working handbook for faster servicing; new info on wide-band & triggered-sweep scopes; covers testing of b/w & color TV sets. **EDP-149**... **4.50**

See page 48 for book-ordering information

Easier circuit design from Heath



New

Heathkit ET-3300 lab breadboard makes circuit development simpler ...for experimenters, students and design engineers

Here's everything you could want for basic solid-state circuit design and development...in one neat package. The new Heathkit ET-3300 is a laboratory breadboard with solderless sockets and built-in power supplies...and that means convenient, easy circuit hook-up and fast teardown.

The ET-3300 can be as versatile as you like. It's an excellent aid for hobbyists and technicians in laboratory experiments; or the "3300" can be used by designers for building up a prototype of a new circuit design. And many of your troubleshooting efforts will be made easier because the ET-3300 is great for testing electronic components and circuits, even can be used as a power supply!

Unique features include three dual ground and power bus strips and four breadboarding sockets, each with forty-eight dual rows of common connection points. The "3300" accommodates both discrete components and integrated circuits...and its solderless connectors accept up to #20 solid wire. For maximum versatility and ease in circuit design and development, get your ET-3300 today.

Kit ET-3300, Shpg. wt. 6 lbs. **79.95**

ET-3300 SPECIFICATIONS

OUTPUTS: +5 VDC @ 1.5 amps; +12 VDC @ 100 mA; −12 VDC @ 100 mA. **REGULATION: Load:** Less than 2% variation from no load to full load on all supplies. **CURRENT LIMITING:** Fixed current limiting of each supply at rated current provides short-circuit protection. **POWER REQUIREMENT:** 120/240 VAC 60/50 Hz 30 watts at full load. **SIZE:** 3½″ H x 12″ W x 12″ D.

Free Heath/Schlumberger Assembled Instruments Catalog



When you're looking for instruments that can deliver a maximum performance with a minimum strain on your budget, you need the latest Heath/Schlumberger Assembled Instruments Catalog. It contains complete descriptions, specifications and prices for many high performance instruments for industrial and educational applications. Included are frequency counters...oscilloscopes...power supplies...function generators...TV and audio service equipment...multimeters ...strip chart recorders...and more.

To see how easy it is to get more instrument value per dollar, send the coupon below for your free copy of our latest catalog. We'll also place you on our mailing list to receive future catalogs and keep you informed about the latest from Heath/Schlumberger.

Please send my free copy of the latest
Heath/Schlumberger Assembled Instruments Catalog.

Heath/Schlumberger Instruments, Dept. 524-13, Benton Harbor, Mich. 49022

Name

Title

Company/Institution

Address

City State Zip

Your best value in go-anywhere 2-M rigs

1-Watt out, 5 receive and 10 transmit channels plus $60 in accessories

New



Select any of 5 channels, adjust volume and squelch with convenient top-mounted controls.



Includes rechargeable nickel-cadmium battery pack and AC charger.



Flexible "rubber duckie" antenna, matched to transceiver is included, plus jack for external antenna.



Optional vinyl case, Auto-Patch Encoder for phone calls through repeaters with touch-tone input.



Optional Auto-Patch Encoder Shown Installed

$169.95

Super-Value HW-2021 Handheld 2-Meter Transceiver

Compare features, compare specs and you'll be convinced — the HW-2021 is the best handheld 2-meter rig around. A single crystal controls both transmit and receive. The simplex/offset switch selects —600 kHz or simplex crystals (included) to give you two transmit frequencies for each crystal you buy. Or substitute your own crystals for any two offset frequencies desired. We include a 146.94 MHz crystal with the HW-2021 to get you on the air in a hurry. Transmitter output is one watt minimum with 0.005% or better stability. FM circuitry and a separate microphone contribute to better audio. The optional HWA-2021-3 auto-patch encoder gives you access to telephone lines through repeaters with touch-tone input — adds telephone versatility at remarkably low cost. Pulse-type battery saver circuit extends battery life by about 75% in the standby/receive mode. The rechargeable battery pack operates the HW-2021 for approximately 10 hours on one charge. The battery charger recharges the batteries fully in about 16 hours. Compact and rugged, with textured black high-impact case. Weighs just 2 lbs. including batteries. Not recommended for beginning kit builders due to its compactness. Requires small 25-watt soldering iron such as Weller W-PS for construction, and VOM or VTVM for alignment. Order additional crystals at right.

Kit HW-2021, Shpg. wt. 5 lbs. **169.95**

HWA-2021-2, Carrying Case and Strap, Shpg. wt. 1 lb. **12.95**

HW-2021 SPECIFICATIONS

RECEIVER — Sensitivity: 0.5 μV for 12 dB SINAD; 0.75 μV for 20 dB quieting. **Squelch Threshold:** .3 μV or less. **Audio Output:** .5 watts at less than 10% THD. **Image Rejection:** Greater than —45 dB. **IF Frequency:** 10.7 MHz. **Modulation Acceptance:** ±7 kHz minimum. **TRANSMITTER — Power Output:** 1 watt minimum. **Oscillator Frequency:** Approximately 15 MHz. **Multiplier Factor:** x9. **Modulation:** Frequency (with limiting). **GENERAL — Speaker Impedance:** 8Ω. **Operating Frequency Range:** 143.9 to 148.3 MHz (unit will meet specifications ±1 MHz from alignment frequency within this range). **Operating Temperature Range:** +10° to +120° F (—12° to +47° C). **Operating Voltage:** 12 VDC nominal. **Size (overall):** 9¼" x 1⅞" x 3¼". **Weight (including batteries):** 2 lbs.

Auto-Patch Encoder

Places telephone calls through repeaters with touch-tone input — can even be used for repeater control. 12 digit keyboard with LED keying light and 2-sided epoxy board. Designed for "2021" but can be used in others. For experienced builders.

Kit HWA-2021-3, Shpg. wt. 2 lbs. **39.95**

HW-2021 Crystal Certificates

Crystals designed to exacting Heath standards assure optimum performance from your HW-2021. A certificate will be sent to you postpaid. You specify frequency, mail the certificate to the manufacturer and get the crystals postpaid by return mail.

HWA-2021-4 . . . . . **6.95**



2-Meter Amplifier boosts the power of the HW-2021

For anyone who wants extra output at low cost, the HA-201 delivers up to 10 watts for a 1½ watt input, 8 watts for a 1 watt input — ideal for use with the HW-2021 above. Features fully automatic operation, solid-state transmit/receive switching, tuned input and output for maximum efficiency and reduced spurious emissions. *Withstands infinite VSWR load without failure.* Includes dummy load and RF detector. Easy 1 to 2 hour assembly. VTVM needed for tuneup. Operates from 12-16 VDC. (HWA-202-1 or car battery).



Kit HA-201, Shpg. wt. 3 lbs. **27.95**

Charge a kit — no money down on any kit — see page 50 for details.

Whether you want synthesized or crystal-controlled,

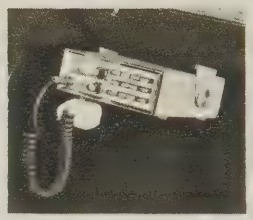
$179.95

HEATH charg-a-kit REVOLVING CHARGE

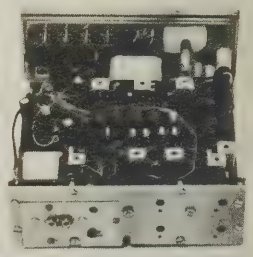


Optional Tone-Burst Encoder shown installed.

Includes push-to-talk mike



Includes gimbal mount for convenient installation. For security, the transceiver is easy to remove — Just unplug 2 cables & unscrew knurled knobs.



Open layout makes the HW-202 easy to build (shown with encoder board installed). Nine adjustments let you align it without special instruments. Requires only a VOM.

Heathkit HW-202 — proven performance and outstanding value

Our HW-202 2-meter transceiver has become an industry standard with a reputation for excellent audio quality. And for the money, we don't think there's a better rig around. Just compare features and specifications.

Operates on any 2 MHz segment of the 143.9 to 148.3 MHz range with independent selection of 6 transmit and 6 receive channels. And all 12 crystals can be netted for optimum performance. The transmitter delivers a solid 10 watts minimum and will operate into an infinite VSWR without failure. Standard narrow band deviation adjustable up to 7.5 kHz with instant limiting.

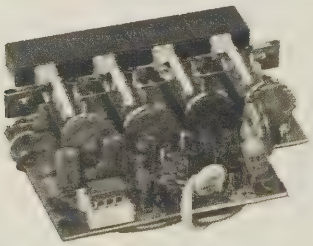
And the receiver is hot: 0.5 μV signal provides 15 dB of quieting...squelch threshold is 0.3 μV or less. Audio output to the built-in speaker is typically 2 watts at less than 3% harmonic distortion. Diode-protected dual gate MOSFETS in the front end...IC IF that limits at less than 10 μV...dual conversion...monolithic 4-pole 10.7 MHz crystal filter...built-in hash filter/voltage regulator to keep ignition noise out and maintain constant input voltage despite changing car system demand. Kit includes a set of crystals for 146.94 MHz to aid in tune-up and get you on the air quickly... cable for 12 V hook-up...heavy-duty alligator clips for use in a temporary installation. Get on 2 with maximum versatility and lowest cost with the HW-202. And check out the full line of accessories.

Kit HW-202, Shpg. wt. 11 lbs. **179.95**

HW-202 SPECIFICATIONS

RECEIVER — Sensitivity: 12 dB SINAD* (or 15 dB of quieting) at .5 μV or less. **Squelch threshold:** 0.3 μV or less. **Audio output:** 3 W at less than 10% total harmonic distortion (THD). **Operating frequency stability:** Better than ±.0015%. **Image rejection:** Greater than 45 dB. **Spurious rejection:** Greater than 60 dB. **IF rejection:** Greater than 80 dB. **First IF frequency:** 10.7 MHz ±2 kHz. **Second IF frequency:** 455 kHz (adjustable). **Receiver bandwidth:** 22 kHz nominal. **De-emphasis:** −6 dB per octave from 300 to 3000 Hz nominal. **Modulation acceptance:** 7.5 kHz minimum. **TRANSMITTER — Power output:** 10 watts minimum. **Spurious output:** Below −45 dB from carrier. **Stability:** Better than ±.0015%. **Oscillator frequency:** 6 MHz, approximately. **Multiplier factor:** X24. **Modulation:** Phase, adjustable 0-7.5 kHz, with instantaneous limiting. **Duty cycle:** 100%. **High VSWR shutdown:** None. **GENERAL — Speaker impedance:** 4 ohms. **Operating frequency range:** 143.9 to 148.3 MHz (will meet specifications ±1 MHz of alignment frequency within this range). **Current consumption:** Receiver (squelched): Less than 200 mA. Transmitter: Less than 2.2 amperes. **Operating temperature range:** −12° to 122°F (−25° to +50°C). **Operating voltage range:** 12.6 to 16.0 VDC (13.8 VDC nominal). **Dimensions:** 2.75″ H x 7.2″ W x 9.875″ D, excluding mount.

Tone Burst Encoder allows the HW-202 to access repeaters



Accesses most closed repeaters for repeater association members, to give your 2-M rig more range and versatility. The four tone select buttons can be pre-set between 1800 Hz and 2500 Hz with bursts adjustable from 0.25 second to continuous. Frequency stability is ±1% from −30 to +50° C. Placing all buttons in "out" position removes encoder from circuit. All components mount on single circuit board which mounts behind the HW-202's removable bezel.

Kit HWA-202-2, Shpg. wt. 1 lb. **26.95**



Read all about 2-Meter Repeaters

2-Meter FM Repeater Circuits Handbook — a comprehensive guide to repeaters, antennas, transmitters, receivers, and much more.

EDP-114 .....**6.95**

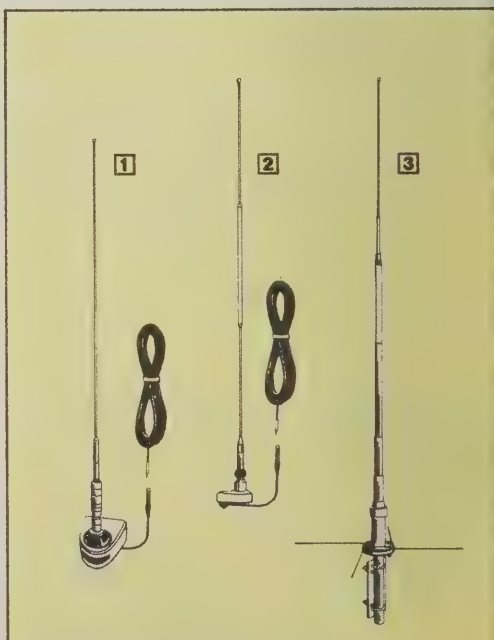
See page 48 for book ordering information.

HW-202 Crystal Certificates

To assure top performance from your HW-202, these crystals are designed and manufactured to Heath's exacting standards. We send the certificate to you postpaid. You mail the certificate to the manufacturer and receive the crystals postpaid by return mail.

HWA-202-6, one Transmit Crystal Certificate, postpaid **5.95**

HWA-202-7, one Receive Crystal Certificate, postpaid **5.95**

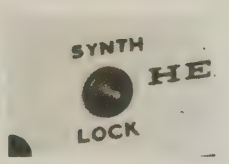


Charge a kit — no money down on any kit — see page 50 for details.

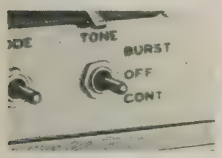
build-it-yourself Heathkit 2-meter is your best buy



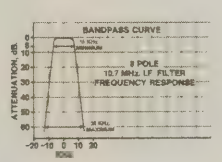
Lever switches set the exact frequency you want. 0/5 kHz toggle switch for split channel operation.



LED indicator shows when the synthesizer is locked on frequency and ready to transmit.



Built-in continuous/burst tone encoders are standard equipment — not expensive options!



8-pole crystal IF filter reduces adjacent channel interference by providing ideally-shaped bandpass.

$289.95



Exceptional demand for the HW-2026 may delay shipment up to 60 days. Place your order now and we'll promptly assign you a priority number. You will be notified when to send payment.

HW-2026 SPECIFICATIONS

RECEIVER — Sensitivity: .5μV for 12 dB SINAD (or 15 dB of quieting.) **Squelch Threshold:** 3 μV or less. **Audio output:** 2 watts (typical) at less than 10% THD (5 kHz deviation). **Image rejection:** Greater than 45 dB. **Spurious rejection:** Greater than 50 dB. **IF rejection:** Greater than 80 dB. **Internally generated spurious:** Below 1 μV equivalent, except at 146.87, 146.90, 147.46, 147.53, and 147.80 MHz. **Bandwidth:** 6 dB: 15 kHz, min. 60 dB: 30 kHz max. **Modulation acceptance:** 7.5 kHz, minimum. **TRANSMITTER — Power output:** 10 watts, minimum. **Spurious output:** —40 dB within 2 MHz of carrier; —45 dB elsewhere. **Modulation:** FM, 0 to 7.5 kHz adjustable. **Duty cycle:** 100% with ∞ VSWR. **Tone encoder:** Burst mode: 1800 to 2500 Hz, 6 kHz deviation. Continuous Mode: 70 to 200 Hz, 0.7 kHz deviation. **GENERAL — Frequency coverage:** 144.000 to 147.995 MHz (any 2 MHz segment). **Frequency increments:** 5 kHz. **Frequency stability:** ±.0015%. **Transmitter offset:** 0 and —600 kHz supplied, provision for 1 additional. **Operating temperature range:** —10 to +50°C. **Current consumption:** Receive: (squelched); 700 mA, max. Transmit: 2.5 A, max. **Operating voltage:** 12.6 to 16.0 VDC, 13.8 VDC nominal. **Dimensions:** 2.75″ H x 7.2 W x 9.875″ D, excluding mount. **Weight:** 6 lbs.

Heathkit HW-2026 — 2-Meter FM Transceiver with synthesis

Combines state-of-the-art technology with exceptional operating ease...all in one easy to build kit that can save you hundreds of dollars. Features true digital frequency synthesizer — no crystals to buy, no channel limitations. Employs digital technology with voltage controlled oscillator (VCO) and 1 MHz time base. Just flip the levers on the front panel to select any frequency in any 2 MHz segment of the 144 to 147.995 operating range. If you inadvertently dial up an out-of-band frequency, the transmitter won't key. Has LED status lights to show frequency is locked in and whether channel is in use. Automatic repeater offset, plus built-in tone encoder means you can work any open repeater. Use simplex or the —600 kHz offset or add a crystal to the "aux." position for +600 kHz offset or other desired effect. For repeater association members, the encoder has burst and continuous modes for access to most closed repeaters. Delivers minimum 10 watts output and infinite VSWR without failure. It's a really "hot" receiver with superior audio too — 0.5 μV sensitivity, Schmitt-trigger squelch with a threshold of 0.3 μV or less, dual gate MOSFET's in the front end, IC I.F., dual conversion, 8 pole crystal filter. Big 2x6″ speaker plus jack for external speaker. Kit building is easy too, with just 5 circuit boards. Alignment requires only a VTVM, but a frequency counter can be helpful. Truly a great transceiver buy!

Kit HW-2026, Shpg. wt. 12 lbs. **289.95**

AC Power Supply.

Kit HWA-202-1, Shpg. wt. 7 lbs. **32.95**

Quality 2-Meter Antennas

1 Standard gain mobile 2-M antenna. 5/8″ wavelength rear deck whip. 3.4 dB gain over ¼-wave vertical. SWR: typically 1.1.1 at resonance. 100 watts, 47″ stainless steel radiator. 17′ RG-58-U coax, connectors.

Kit HWA-202-3, Shpg. wt. 2 lbs. **19.95**

2 Super gain mobile 2-M colinear antenna. Phased ¼ and 5/8 wave radiators. 5.2 dB gain over ¼ wave vertical. 180° swivel ball. 200 watts; 6 MHz bandwidth; 1.5:1 or better SWR. Typical SWR at resonance, 1.1:1. Height, antenna & mount, 85″. Removable stainless steel elements. 17′ RG-58-U coax, connectors.

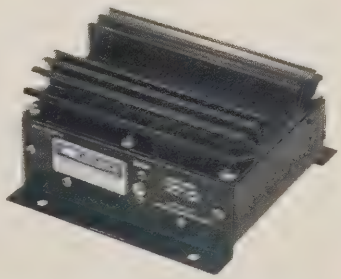
Kit HWA-202-9, Shpg. wt. 3 lbs. **37.95**

3 Super gain fixed station 2-M colinear. 6 dB gain from two 5/8 wave colinear radiators with ¼ wave phasing. 140-150 MHz, field adjustable. 6 MHz bandwidth for 2:1 or better SWR. Resonance SWR, 1.2:1 at antenna. 1000 watts for repeater, fixed station. Shunt fed with DC grounding. SO-239 connector. Alum. vertical element 117″ long, 4 radials; 21″ alum. rod. Wind load, 26 lbs. at 100 mph; wind survival, 100 mph. Mounts to 1¾″ OD vertical pipe. Less coax.

Kit HWA-202-10, Shpg. wt. 8 lbs. **47.95**

Deluxe 40-watt 2-meter amplifier

Solid 40 W minimum for 10 W in. Draws only 7 A maximum from your car battery, and it can be mounted just about anywhere. Antenna changeover relay and sensing circuitry provide completely automatic T/R switching. Solid-state design features husky 2N5591 output devices in a highly efficient heat sink. Emitter-ballasted configuration — withstands VSWR's up to 3:1, yet remains cool and continues to run. Tuned input/output circuits provide low spurious radiation and allow coverage of any 1.5 MHz portion of the band. Final alignment requires only a VTVM, wattmeter of SWR bridge.



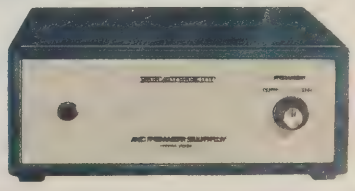
Kit HA-202, Shpg. wt. 4 lbs. **59.95**

HA-202 SPECIFICATIONS

Frequency range: 143-149 MHz. **Power output:** 20 W @ 5 W in. 30 W @ 7.5 W in, 40 W @ 10 W in 50 W @ 15 W in. **Power input (rf drive):** 5 to 15 W. **Input/output impedance:** 50 ohms, nominal. **Input VSWR:** 1.5:1 max. **Load VSWR:** 3:1 max. **Power supply requirements:** 12 to 16 VDC, 7 amps max. **Operating temperature range:** —30° F. to +140° F. **Dimensions:** 3″ H x 4¼″ W x 5½″ D.

AC Power Supply

Lets you use your HW-202 and HW-2026 as a base station. Delivers 13.8 VDC at 2.2 A with better than 1.0% regulation. 120/240 VAC wiring options, circuit breaker overload protection. With cables and 3-wire line cord.



Kit HWA-202-1, Shpg. wt. 7 lbs. **32.95**

Heathkit SB-104 series...our most sophisticated

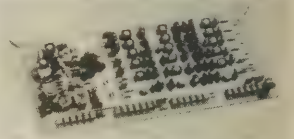


$669.95

HEATH charg-a-kit REVOLVING CHARGE



Completely solid-state design... including the finals. Over 275 solid-state devices, including 31 integrated circuits. Finals are warranted for one year.



Completely broadbanded. Neither the transmitter nor receiver sections require tuning from 3 to 30 MHz...instant QSY!

Heathkit SB-104 Amateur Transceiver

Totally broadbanded, completely solid-state, true digital readout and much more—the standard others will be judged by for years to come. Operates USB, LSB or CW—you can go from CW on the low end of 80 to USB on the high end of 10 in just seconds—and with perfect tune. At last, instant QSY. Choose the band, dial the frequency, select your mode and go—no more preselector, load or tune controls.

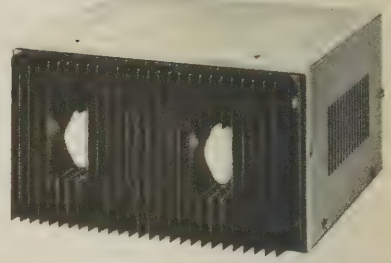
True digital readout with 6 easy-to-read electronic digits provides resolutions down to 100 Hz on all bands. There's no more need to rely on inaccurate dial tracking or questionable VFO linearity. True digital circuitry takes into account all three frequencies: VFO, HFO and BFO. You don't even need a calibrator.

The transmitter delivers 100 watts output, and for QRP'ers, a front-panel switch instantly switches the output to one watt. And the four final transistors are protected against high SWR and thermal runaway, so they should never need replacement. The signal is clean and strong—low harmonic and spurious radiation, third-order distortion down 30 dB or better at 100 watts, carrier and unwanted sideband suppression down —55 dB. We've dramatically reduced cross-modulation and intermodulation to increase useable sensitivity, too. And we didn't forget convenience—15 MHz WWV position on the bandswitch, 30 kHz per revolution spinner knob, tune button for loading linears, PTT mike jack, pushbutton 100 Hz blanking. ALC/relative power/S-meter, switchable VOX with gain and delay, much more.

Eleven of the 15 boards plug in and seven can be extended out of the chassis while the transceiver is operating. Two wiring harnesses eliminate most point-to-point wiring. Alignment is fast and simple requiring only a dummy load, mike and VTVM. The SB-104 operates directly from a 12V auto electrical system. For fixed station use, hook up the HP-1144 Power Supply.

Kit SB-104, Shpg. wt. 31 lbs. **669.95**
Kit HP-1144, Fixed station power supply, Shpg. wt. 28 lbs. **89.95**
Kit SB-604, Speaker & cab., Shpg. wt. 8 lbs. **29.95**
Kit SBA-104-1, Noise blanker, Shpg. wt. 1 lb. **26.95**
Kit SBA-104-2, Mobile mount, Shpg. wt. 6 lbs. **36.95**
Kit SBA-104-3, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **39.95**

Fixed Station Power Supply



120 V/240 VAC operated supply provides 13.8 VDC required by SB-104 Transceiver. Full-wave bridge circuit has triple Darlington regulation with an integrated circuit which samples, compares, and automatically maintains a fixed voltage. Output is remotely sampled at the load end of the power cable, compensating for voltage drop across fuse and cable, to provide almost no change in voltage from no load to full load. Entire unit mounts within SB-604 speaker cabinet.

Kit HP-1144, Shpg. wt. 28 lbs. **89.95**

HP-1144 SPECIFICATIONS

Output Voltage: 13.8 VDC regulated (Adjustable from approximately 11 to 16 VDC). **Maximum Output Current:** 20 amperes, intermittent. 8 amps continuous. **Power Requirement:** 110 to 130 VAC @ 6A or 220 to 260 VAC @ 3A, 50/60 Hz maximum. **Dimensions:** 5½″ H x 9¼″ W x 10¼″ D. **Regulation:** Less than 2% output voltage variation from no load to 20 amperes. **Ripple:** Less than 1% at 20 amperes. **Fuses:** 7-amp, 3AG, slow-blow primary. 20-amp, 3AG, output. **Net Weight:** 23 lbs.

SB-604 Station Speaker

Designed and styled to match the SB-104 Transceiver, the cabinet is large enough to house the HP-1144 AC Power Supply. The 5″ x 7″, 3.2 ohm speaker is response-tailored for SSB. Connector cable & plug are included.

Kit SB-604, Shpg. wt. 8 lbs. **29.95**

SB-604 SPECIFICATIONS

Speaker Size: 5″ x 7″ oval. **Voice Coil Impedance:** 3.2 ohms. **Frequency Response:** 300 to 3000 Hz. **Magnet Weight:** 3.16 oz. **Cabinet:** Aluminum with gray wrinkle finish. **Dimensions:** 7⅛″ H x 10⅛″ W x 14″ D.

SB-104 SPECIFICATIONS

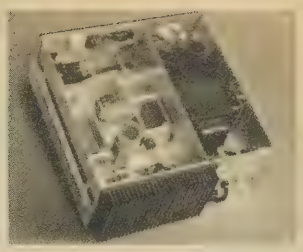
TRANSCEIVER SECTION — GENERAL OPERATION: Frequency Coverage: 3.5 MHz through 29.7 MHz amateur bands, 15 MHz WWV receive only. **Frequency Stability:** Less than 100 Hz/hr drift after 30-min. warmup; less than 100 Hz drift for ±10% change in primary voltage. **Readout Accuracy:** Within ±200 Hz ±1 count. **Audio Frequency Response:** 350 to 2450 Hz ±75 Hz (6 dB bandwidth). **Dial Backlash:** 50 Hz max. **Phone Patch Impedance:** 4 ohm output to speaker; high impedance output to transmitter. **TRANSMITTER: RF Power Output: High Power** (50 ohm non-reactive load). SSB: 100 watts PEP ±1 dB; CW: 100 watts ±1 dB. **Low Power** SSB: 1 watt PEP (minimum); CW: 1 watt (minimum). **Output Impedance:** 50 ohms, less than 2:1 SWR. **Carrier Suppression and Unwanted Sideband Suppression:** 55 Db down from 100 watt single-tone output at 1000 Hz reference. **Harmonic Radiation:** 45 dB below 100 watt output. **Spurious Radiation:** —50 dB within ±3 MHz of carrier; —60 dB farther than ±3 MHz from carrier, except —40 dB at 3.39 MHz on 80 meter band. **Microphone Input:** High impedance with a rating of —45 to —55 dB; approx. 25K ohms. **RECEIVER—Sensitivity:** Less than 1.0 microvolt for 10 dB S+N/N for SSB operation. **Selectivity:** 2.1 kHz minimum at 6 dB down, 5 kHz maximum at 60 dB down. (2:1 nominal shape factor). **CW Selectivity:** (with accessory CW filter) 400 Hz at 6 dB down; 2 kHz max. at 60 dB down. **Audio Output:** 2.5 watts into 4 ohms, 1.25 watts into 8 ohms, at less than 10% THD. Low impedance headphones (4-8 ohm). **AGC:** Less than 1 millisecond attack time; switch selectable 100 msec. and 1 sec. release, and OFF. **IM Distortion:** —65 dB min.; typically —57 dB with noise blanker. **Image Rejection:** —60 dB min. **IF Rejection:** —60 dB min. **Internally Generated Spurious:** Below 2 microvolt equivalent antenna input, except at 3.65, 3.74, 14.24 MHz and 21.2 MHz. **Dimensions:** 5¾″ H x 14⅛″ W x 13⅞″ D. (Less knobs, feet and connectors). **Weight:** 20 lbs.

Present SB-104 owners — no cost mod kit now available for improved sensitivity, see page 51.

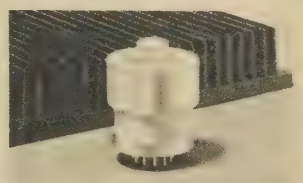
SSB Transceiver System



$339.95



Chassis of the SB-230.



The business end of the SB-230 — a conduction-cooled triode final and efficient heat sink. No blower needed.

SB-230 1kW Conduction-Cooled Linear

The lowest cost conduction-cooled linear on the market. Uses a husky Eimac 8873 triode in proven, stable, grounded grid circuitry to deliver up to 1200 watts PEP SSB, 1000 watts CW input from less than 100 watts drive. It's also rated at 400 watts input for slow-scan TV and RTTY. And the final is completely enclosed in a double-shielded compartment. Bandswitching is done with a single knob...Load and Tune controls are clearly marked so you can return to a favorite operating frequency just by noting the control positions. A five-position switch, coupled with the back-lighted meter, indicates Relative Power, Plate current, Grid current and plate High Voltage at a glance. Relative Power sensitivity is adjustable with the front panel knob.

Built-in safety features include microswitch interlocks on both the top and bottom to shut down primary power when cabinet shells are removed; a temperature monitored heat sink that shuts down the unit if temperature goes too high. Built-in delay circuit allows sufficient tube warmup. An Exciter light indicates the linear is running straight through, without amplification. The On-Off switch includes a circuit breaker for the primary side of the power transformer. And the cathode of the tube is fused.

Kit SB-230, Shpg. wt. 40 lbs. **339.95**

SB-230 SPECIFICATIONS

Band Coverage: 80, 40, 20, 15 and 10 meter. **Duty Cycle:** SSB: continuous voice modulation; CW: continuous (max. key-down time 30 seconds); RTTY/SSTV: 50% (max. transmit time 10 minutes at 400 watts). **Driving Power Required:** less than 100 W. **Third Order Distortion:** —30 dB or better. **Output Impedance:** 50 ohms at 2:1 SWR max. **Input Impedance:** 52 ohms at 1.5:1 SWR max. **Zero Signal Plate Current:** 25 mA. **Power Requirement:** 120 VAC, 50/60 Hz, 14 A max. or 240 VAC, 50/60 Hz, 7 A max. **Dimensions:** 14¾" W x 16" D x 7" H. **Net Weight:** 33½ lbs.



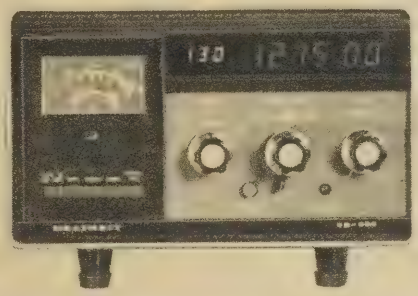
SB-614 Station Monitor

Monitors transmitted SSB, CW, & AM signals up to 1 kW from 80-6 meters. Shows nonlinearity, insufficient or excessive drive, poor carrier or sideband suppression, regeneration, parasitics and key clicks. Manual includes 40 CRT displays and explanations.

Kit SB-614, Shpg. wt. 17 lbs. **139.95**

SB-614 SPECIFICATIONS

RF SAMPLING SECTION: Power Limits: Exciter input (50 —75 ohm) 10 to 300 watts; Antenna input (50 —75 ohm) 10 to 1000 watts. **Insertion Loss:** Negligible. **VERTICAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 75 pf. **Sensitivity:** 60 mV rms/¼" vertical deflection. **Attenuator:** 2 position; x1, 2 volts rms max. input; x10, 20 volts rms max. input. **HORIZONTAL AMPLIFIER: Input Impedance:** 1 Megohm shunted by 50 pf. **Sensitivity:** 50 mV rms/¼" horizontal deflection. **SWEEP GENERATION: Type:** Recurrent, automatic sync. **Frequency Range:** 10 Hz to 10 kHz in three ranges. **GENERAL: Graticule:** .250 inch squares 6 x 8 (1.5 x 2.0 inches total viewing area). **Power Requirement:** 110-130 or 220-260 VAC, 60/50 Hz. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 12 lbs.



SB-634 Five-function Station Console

Provides five of the necessary station functions every amateur needs. 24-hour digital clock; ten-minute ID timer; RF wattmeter; SWR bridge; phone patch.

Kit SB-634, Shpg. wt. 14 lbs. **179.95**

SB-634 SPECIFICATIONS

CLOCK — Display: Six digits. **Time Base:** 24 hours. **TIMER — Display:** Three full digits. **Time Interval:** 10 minutes with automatic reset. Manual reset at any portion of 10-minute period. **Signal:** Visual only or both visual and aural. **RF POWER/SWR METER — Frequency Range:** 1.8 to 30 MHz. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Handling Capability:** 2000 watts (maximum). **SWR Sensitivity:** Less than 10 watts. **Impedance:** 50 ohm nominal. **Connectors:** UHF type SO-239. **PHONE PATCH — Circuit:** Telephone hybrid for VOX or manual operation. **TELEPHONE LINES — Input Impedance:** Approximately 600 ohm. **Null Depth:** At least 30 dB isolation between transmit and receive circuits. **Power Requirement:** 120/240 VAC, 60/50 Hz, 15 watts. **DIMENSIONS:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 10 lbs.



SB-644 Remote VFO

Designed exclusively for use with the SB-104. Provides split transmit/receive capability without a separate transmitter and receiver. Multi-mode capability allows transceive operation on either the "644" or the "104." Use either of the two crystal positions in the "644" for fixed-frequency control. "644" tuning scale gets you into the right frequency area, exact frequency readout takes place in the "104." Switch from transmit to receive and the display automatically changes to the correct frequency. Uses the same kit VFO as the SB-104. Requires no modifications to "104."

Kit SB-644, Shpg. wt. 10 lbs. **119.95**

SB-644 SPECIFICATIONS

Frequency Coverage: 5.0—5.5 MHz allowing 80, 40, 20, 15, 10 meter operation in the SB-104. **Frequency Stability:** Less than 100 Hz drift per hour after thirty minute warmup. **Modes of Operation:** Remote VFO Main VFO; Receive Remote/Transmit Main; Receive Main/Transmit Remote; Crystal frequencies (2) (crystals not supplied). **Dial Backlash:** 100 Hz max. **Power Requirement:** 11V and 13.6V at 500 mA. **RF Output:** 0.34 to 0.4V RMS over 5 to 5.5 MHz into a 5 ohm load. **Dimensions:** 7¼" H x 10¼" W x 15¼" D. **Net Weight:** 6½ lbs.

Heathkit 5-Band SSB Transceiver



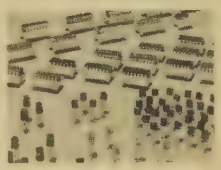
Now more hams than ever can afford broadband design thanks to the Heathkit HW-104 Transceiver

Instant QSY! Choose the band, frequency and mode and it stays tuned anywhere — without preselector, load or tune controls. Transmission is clean from 100 watts through one, with low harmonic and spurious radiation. At 100 watts third order distortion is down 30 dB and carrier and unwanted sideband suppression are down 55 dB. Reception is super clear thanks to a broadband design that minimizes cross-modulation and intermodulation. Active devices are minimized ahead of the 4-pole crystal filter. Adjacent signal overload is minimized too. Yet, sensitivity is less than 1 μV. And for convenience, there's a 15 MHz WWV receive position on the band switch and a "pull-to-calibrate" position on the RF control.

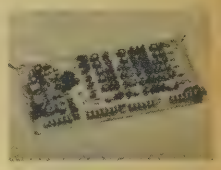
The smooth action dial covers 3.5 MHz to 29.0 MHz with 15 kHz per knob revolution. A built-in 100 kHz and 25 kHz calibrator insures dial accuracy to within 2 kHz (markings in 5 kHz increments). The VFO is the same basic circuitry as the SB-104 with less than 100 Hz/hr. drift after warmup. Want the top MHz of 10 meters? Add the HWA-104-1 accessory.

Assembly is clean and precise, too. All you need for alignment is a dummy load, microphone and VTVM. And you can add the matching SB-614 Station Monitor and SB-634 Console to your HW-101 rig. For fixed station use, order HP-1144 supply.

Kit HW-104, Shpg. wt. 31 lbs. **539.95**
Kit HP-1144, AC power supply, Shpg. wt. 28 lbs. **89.95**
Matching speaker. (Shown above.)
Kit HS-1661, Shpg. wt. 5 lbs. **19.95**
10-meter accessory, coverage to 29.7 MHz.
Kit HWA-104-1, Shpg. wt. 1 lb. **16.95**
SBA-104-1, Noise blanker. Shpg. wt. 1 lb. **26.95**
SBA-104-2, Mobile mount, Shpg. wt. 6 lbs. **36.95**
SBA-104-3, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **39.95**



All solid-state...including the finals. Output warranted for one year.



Completely broadbanded. No tuning from 3 to 30 MHz... instant QSY.



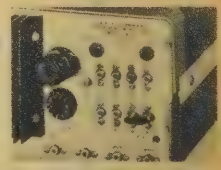
Built-in 100 kHz & 25 kHz calibrator. Keeps your dial scale accurate to 2 kHz.



Circuit board construction. Seven major boards can be extended for adjustment.



Optional noise blanker for up to 50 dB of effective blanking.



Complete back-panel connections. Access in & out to everything.

HW-104 SPECIFICATIONS

Frequency Coverage: 3.5 MHz through 29.0 MHz amateur bands, (through 29.7 MHz, with HWA-104-1 accessory). **Frequency Stability:** less than 100 Hz/hour drift after 30-min. warmup; less than 100 Hz drift for ±10% change in primary voltage. **Modes of Operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial Accuracy:** Within 2 kHz after calibration at nearest 100 kHz marker. Built-in calibrator provides 100 kHz and 25 kHz markers. 5 kHz dial markings. Approximately 15 kHz per turn. **Audio Frequency Response:** 350 to 2450 Hz ±75 Hz (6 dB bandwidth). **Tuning Backlash:** 50 Hz or less. **Phone Patch Impedance:** 4Ω output to speaker; high impedance output to transmitter. **Power Requirements:** 13.8 VDC nominal (maximum 16 VDC) at: Receive: 2 amps. Transmit, low power: 3 amps. Transmit, high power: 20 amps. **TRANSMITTER — RF Power Output: High Power** (50Ω nonreactive load). SSB: 100 watts PEP ±1 dB, CW: 100 watts ±1 dB. **Low Power:** SSB: 1 watt PEP (minimum), CW. 1 watt (minimum). **Output Impedance:** 50 ohms, less than 2:1 SWR. **Carrier Suspension:** 55 dB down from 100 watt single-tone output at 1000 Hz reference. **Unwanted Sideband Suppression:** 55 dB down from 100 watt single-tone output at 1000 Hz reference. **Harmonic Radiation:** 45 dB below 100 watt output. **Spurious Radiation:** —50 dB within ±3 MHz of carrier, except on the 3.5 band, —40 at 3.395 MHz. —60 dB greater than ±3 MHz from carrier. **Third Order Distortion:** 30 dB down from two-tone output, reference at 100 watts PEP. **Transmit/Receive Operation:** SSB: PTT or Vox. CW: Keyed-tone Vox or Manual. **NOTE:** In the low power mode all transmit-receive switching is solid-state. **CW Sidetone:** Internally switched to speaker or headphones in CW mode. Approximately 700 Hz tone. **Microphone Input:** High impedance with a rating of —45 to —55 dB. **RECEIVER Sensitivity:** Typically 0.6 μV for 10 dB S+N/N for SSB operation. **Selectivity:** 2.1 kHz minimum at 6 dB down, 7 kHz maximum at 60 dB down. **CW Selectivity (with accessory CW filter):** 400 Hz at 6 dB down, 2 kHz at 60 dB down. **Overall Gain:** Less than 1 microvolt for 0.5 watt audio output. **Audio Output:** 2.5 watts into 4 ohms, 1.25 watts into 8 ohms, at less than 10% THD. **AGC:** Less than 1 millisecond attack time; switch selectable 100 μsec and 1 S release, and OFF. **Intermodulation Distortion:** —60 dB. **Image Rejection:** —60 dB. **IF/IM Rejection:** —60 dB. **Internally Generated Spurious Signals:** Below 2 microvolt equivalent antenna input, except at 3.65, 3.74, 14.25, and 21.2 MHz. **Cabinet Dimensions:** (less knobs, feet, sockets, rails) 5¾" H x 14$^{15}/_{32}$" W x 13⅞" D (14.6 cm. x 36.75 cm. x 35.24 cm.). **Net Weight:** 20 lbs. (7 kg.)

Informative Radio Books



Single-Sideband: Theory and Practice — a one-source guide emphasizing basic principles & circuitry rather than math.
EDP-120 .....**6.95**

Radio Handbook — the standard work on practical & theoretical aspects of radio communications and electronics.
EDP-117 .....**19.50**

See page 48 for book ordering information.

Charge a kit — no money down on any kit — see page 50 for details.

Useful accessories for SB-series gear



Heathkit SB-200 Amp has a 1 kW kick

$299.95

- *Built-in solid-state power supply*
- *Fan cooled amplifier compartment*
- *Sturdy one-piece aluminum chassis*
- *Easy assembly*

Undoubtedly one of the most popular linear amplifiers in the ham world. The Heathkit SB-200 delivers a full 1200 W PEP SSB input, 1 kW on CW. Features include: Solid-state power supply with circuit breaker protection, metering for SWR, grid current, plate current, relative power, plate voltage. Pretuned cathode input circuit for maximum efficiency and low distortion. Clean, open layout makes assembly extra easy.

Kit SB-200, Shpg. wt. 50 lbs. **299.95**

SB-200 SPECIFICATIONS

Band coverage: 80, 40, 20, 15 & 10 meters. **Maximum power input:** 1200 W P.E.P. SSB, 1000 W CW. **Driving power required:** 100 W. **Duty cycle:** SSB, continuous voice modulation; CW 50% (key down time not to exceed 5 min.). **Third order distortion:** 30 dB or better at 1000 W P.E.P. **Output impedance:** 50-75 ohm unbalanced; variable pi-output circuit. **SWR:** not to exceed 2:1. **Input impedance:** 52 ohm unbalanced; broadband pretuned input circuit requires no tuning. **Front panel controls:** Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. **Tube complement:** Two 572B/T-160-L (in parallel). **Power requirements:** 120 VAC @ 16 A (max.), 240 VAC @ 8 A (max.). **Cabinet size:** 6⅝" H x 14⅞" W x 13⅜" D.



2 kW powerhouse—the Heathkit SB-220

$449.95

- *Dual Eimac 3-500Zs in grounded grid*
- *Pretuned broadband pi-input*
- *Solid-state power supply*
- *Full metering*

The one that made history because it offered more features and performance for the price! A pair of Eimac 3-500Zs in grounded grid deliver up to 2 kW PEP SSB input...a full 1 kW on CW and RTTY. Requires just 100 W drive for full output. Pretuned broadband pi-input provides maximum efficiency and minimum distortion from 80—10 meters. Features include a husky built-in solid-state supply that can be wired for either 120 or 240 VAC...built-in circuit breaker protection...Zener diode regulated operating bias to reduce idle I_p for cool running, longer tube life...fan cooled, well-shielded final compartment...complete metering facilities.

Kit SB-220, Shpg. wt. 70 lbs. **449.95**

SB-220 SPECIFICATIONS

Band coverage: 80, 40, 20, 15 and 10 meters. **Duty cycle:** SSB, Continuous voice modulation. CW, Continuous (maximum key-down 10 minutes). RTTY, 50% (maximum transit time 10 minutes). **Third order distortion:** —30 dB or better: **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity, Meter Switch, Power CW/Tune — SSB, Plate meter, Multi-meter. **Rear panel:** Line cord, circuit breakers (two 10 A). Antenna Relay (phono). ALC (phono). RF Input (SO 239). Ground post. RF Output (SO-239). **Power required:** 120 VAC, 50/60 Hz at 20 amp. max. 240 VAC, 60/50 Hz at 10 amp. max. **Cabinet size:** 8¼" H x 14⅞" W x 14½"D.



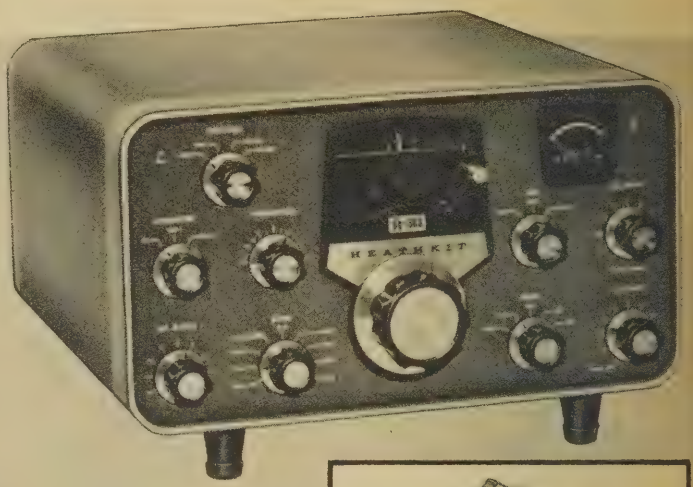
Heathkit SB-620 Spectrum Analyzer

Versatile instrument helps you get the best performance from your SB-series gear — can also be used with most other units. Use as spectrum monitor to scan wide frequency bands for signals or clear frequencies; scan and identify types of transmission; provide visual check for out-of-band operation; measure unwanted sideband, etc. Use with a separate RF signal generator as a basic test instrument: check oscillator stages for harmonic levels and parasitics; linear amps for distortion products; mixer stages for oscillator feedthrough and mixer products; measure third order distortion. Provides 10 and 50 kHz sweep widths for single signal analysis. Has variable sweep to 100 kHz for 455 kHz IF's to 500 kHz above 1 MHz. Both log and linear displays. Operates with common receiver IF's up to 5.2 MHz. Handsome gray and green styling matches other SB-series gear. 6⅝" H x 10" W x 10½" D. Not for use with SB-104.

Kit SB-620, Shpg. wt. 15 lbs. **149.95**

Heathkit classics-famous SB separates and

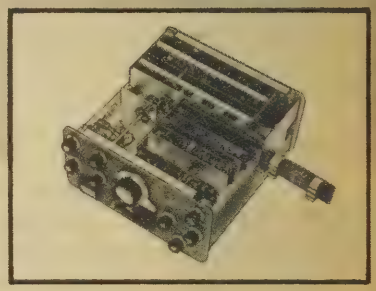




The rig that set today's standards—
Heathkit SB-401 and SB-303

charg-a-kit

An extended board lets you make voltage checks easily even while the receiver is operating.



Heathkit SB-401 Transmitter

$389.95

Last Call For The SB-401! Limited Supply!

- ***Preassembled and aligned linear master oscillator***
- ***Built-in antenna change-over relay***
- ***VOX and PTT control***
- ***Silicon-diode power supply for long life***

Thousands of hams the world over are using this renowned series of transmitters for a lot of reasons, but one stands out above all...its performance/value ratio. Stable, convenient, powerful...at a reasonable price.

180 watts PEP, USB or LSB, 170 watts CW input, from 3.5 to 30 MHz, with a crystal controlled heterodyne oscillator and preassembled and aligned linear master oscillator for accuracy and stability you can count on. Versatile, too...use it in "transceive" with any Heathkit SB-300 series receiver, or with any other by adding the SBA-401-1 Crystal Accessory.

Other features include: voice operated (VOX) and push-to-talk (PTT) control in SSB mode; break-in keying in CW mode; built-in antenna change-over relay, switched 120 VAC for an external antenna relay, crystal filter type SSB generator, automatic lever control for low distortion, high talk power.

The large circular dial has calibrations every kHz and covers 100 kHz per revolution for a bandspread equal to about 10 feet per megahertz; the slide-rule dial pointer indicates the number of rotations of the circular dial. The 5-function meter indicates grid current, plate current, ALC action, plate voltage, and relative power output. Dual voltage primary, transformer operated, silicon-diode power supply for long life and low heat power. Build it now...enjoy it for years to come!

Kit SB-401, Shpg. wt. 36 lbs. **389.95**

SBA-401-1, Crystal pack, Shpg. wt. 1 lb. **29.95**

SB-401 SPECIFICATIONS

Emission: SSB (upper or lower sideband) and CW. **Power input:** 170 W CW, 180 W P.E.P. **Power output:** 100 W (80-15 meters), 80 W (10 meters). **Output impedance:** 50-75 ohm — less than 2:1 SWR. **Frequency range:** 80-10 M amateur bands. **Frequency stability:** <100 Hz/hr. drift after 20 min. warmup. **Carrier suppression:** 55 dB below peak output. **Unwanted sideband suppression:** 55 dB @ 1 kHz. **Intermodulation distortion:** 30 dB below peak output (two-tone test). **Keying characteristics:** Break-in CW provided by operating VOX from a keyed tone (Grid block keying). **CW sidetone:** 1000 Hz. **ALC characteristics:** >10 dB @ 0.2 mA final grid current. **Noise level:** 40 dB below rated carrier. **Visual dial accuracy:** Within 200 Hz (all bands). **Backlash:** <50 Hz. **Oscillator feedthrough or mixer products:** 55 dB below rated output (except 3910 kHz crossover which is 45 dB). **Harmonic radiation:** 35 dB below rated output. **Audio input:** High impedance microphone or phone patch. **Audio frequency response:** 350-2450 Hz ±3 dB. **Power requirements:** 80 W Stdby, 260 W key down @ 120/240 VAC, 60/50 Hz. **Dimensions:** 6⅝" H x 14⅞" W x 13⅜" D.

$389.95

Heathkit SB-303 Receiver

80 through 10, SSB, CW, RTTY, and AM...the world over...all at your fingertips in this solid-state wonder of stability, selectivity, and sensitivity. The preassembled, prealigned solid-state LMO and crystal controlled heterodyne oscillators assure stable and linear tuning with a calibrated dial readout in 1 kHz increments and 100 Hz stability. Calibrate it with its built-in dual frequency integrated circuit crystal calibrator with markers for every 100 kHz or 25 kHz...or tune to WWV at 15 MHz. It has a 0.25 microvolt sensitivity and 2.1 kHz SSB selectivity to keep you going even when the band isn't, and an RF attenuator to use when it is. Three-position AGC, too, to make SSB operating easier. Solid-state circuitry has 28 silicon transistors including 4 MOSFETS and an IC plus a transistor-regulated dual-primary power supply.

Easier-than-ever assembly with modular plug-in Switch-Boards and circuit boards, plus extender boards for easier adjustment...all you need for alignment is an 11-megohm VTVM.

Kit SB-303, Shpg. wt. 22 lbs. **389.95**

SBA-301-1, Optional 3.75 kHz AM crystal filter, Shpg. wt. 1 lb. **24.95**

SBA-301-2, Optional 400 Hz CW crystal filter, Shpg. wt. 1 lb. **29.95**

SB-303 SPECIFICATIONS

Frequency range: 18-10 M amateur bands; 15 MHz WWV. **Intermediate frequency (IF):** 3.395 MHz. **Frequency stability:** <100 Hz drift/hr. after 10 min. warmup <100 Hz drift for ±10% line voltage variation. **Modes of operation:** SSB, CW, AM, RTTY. **Sensitivity:** <0.25 μV for 10 dB S+N/N for SSB operation. **Overall gain:** <1.5 μV input for 0.5 W audio output (single tone SSB). **AGC characteristics:** Blocking —>3.0 V CW/SSB/RTTY. Dynamic Range —>150 dB CW/SSB. RF Attenuator — variable 0.40 dB nominal. **Selectivity:** SSB — 2.1 kHz @ 6 dB down, 5.0 kHz max. @ 60 dB down (crystal filter supplied). CW — 400 Hz @ 6 dB down, 2.0 kHz max. @ 60 dB down (accessory CW crystal filter). AM — 3.75 kHz @ 6 dB down, 10 kHz max. @ 60 dB down (accessory AM crystal filter). RTTY — 2.1 kHz @ 6 dB down, 5.0 kHz max. @ 60 dB down (uses SSB crystal filter). **Image rejection:** >60 dB. **IF rejection:** 3.395 — >55 dB. 8.595 — >50 dB. **Spurious response:** All below 1 μV equivalent signal input. **Temperature ranges:** 10°C-50°C ambient. **Dial accuracy:** Electrical — Within 400 Hz after calibration at nearest 100 kHz or 25 kHz point. Visual — Within 200 Hz. **Calibration:** Every 100 kHz or 25 kHz. **Dial accuracy:** No more than 50 Hz. **Antenna input impedance:** 50 ohm nominal unbalanced. **Audio response:** SSB — 350-2420 Hz nominal @ 6 dB. CW (with accessory filter) — 800-1200 Hz nominal @ 6 dB. AM (with accessory filter) — 200-3500 Hz nominal @ 6 dB. RTTY — 1840-3940 Hz nominal @ 6 dB. **Audio output impedance:** Speaker — 8 ohm: Headphones — Low impedance. **Audio output power:** 4 W <10% distortion. **Muting:** Open external ground at mute socket. **Power requirements:** 120/240 VAC, 40 W max. **Cabinet dimensions:** 6⅝" H x 12¼" W x 13" D. **Overall dimensions (with knobs & feet installed):** 7 15/16" H x 12¼" W x 14" D.

Charge a kit — no money down on any kit — see page 50 for details.

the HW-101 Transceiver



$299.95

Easy to build — thousands of hams have done it!

charg-a-kit

Declare Your Independence



Heathkit HW-101 5-Band Transceiver

- ***Its price/performance ratio makes the HW-101 an exceptional value in amateur radio***

One of the world's best transceiver values. If you've shopped the amateur radio world for transceivers, we think you'll agree the HW-101 is tough to beat in price...or performance. Even its accessories cost less. Compare and be convinced.

Hybrid design, full featured. 20 tubes and 19 semiconductors are combined with the operating features you need. 180 watts input PEP, 170 watts input CW; 0.35 μV sensitivity; FET VFO; PTT and VOX with anti-trip; triple action level control; smooth dial drive with 36-to-1 ratio; built-in 100 kHz calibrator; 4-function meter for receive, ALC on transmit, relative power output, or final cathode current; all going for you on USB, LSB, or CW on 80 through 10.

Easy to build. Circuit boards, wiring harness, and "Switch-Boards" make it happen fast and easy. Build it...join the thousands of hams who've found you can't beat it.

Kit HW-101, Shpg. wt. 23 lbs. **299.95**

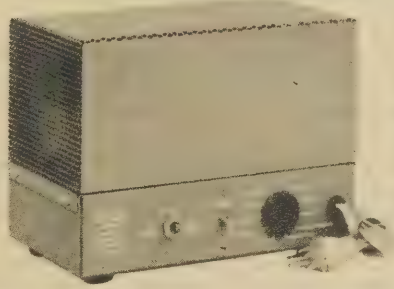
SBA-301-2, 400 Hz CW crystal filter, Shpg. wt. 1 lb. **29.95**

HW-101 SPECIFICATIONS

RECEIVER: Sensitivity: <0.35 μV for 10 dB S+N/N for SSB operation. **SSB selectivity:** 2.1 kHz min. @ 6 dB down; 7 kHz max. @ 60 dB down (3.395 MHz filter). **CW selectivity: (optional SBA-301-2 CW crystal filter); 400 Hz min. @ 6 dB** down; 2.0 kHz max. @ 60 dB down. **Input:** Low impedance for unbalanced coaxial input. **Output impedance:** 8 ohm speaker, and high impedance headphone. **Power output:** 2 watts with <10% distortion. **Spurious response:** Image and IF rejection >50 db. **TRANSMITTER: DC power input:** SSB 180 watt PEP (normal voice, continuous duty cycle). CW 170 watts (50% duty cycle). **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohm to 75 ohm with <2:1 SWR. **Oscillator feedthrough or mixer products:** 55 dB below rated output. **Harmonic radiation:** 45 dB below rated output. **Transmit-receive operation:** SSB: PTT or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. **CW sidetone:** Internally switched to speaker or headphone in CW mode. Approx. 1000 Hz tone. **Microphone input:** High impedance with a rating of −45 to −55 dB. **Carrier suppression:** 45 dB down from single-tone output. **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB from two-tone output. **RF compression (TALC*):** >10 dB at .1 mA final grid current. **GENERAL: Frequency coverage:** 80-10 M amateur bands. **Frequency stability:** <100 hertz per hour drift after 45 minutes warmup from normal ambient conditions. <100 Hz for ±10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Dial calibration:** 5 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz. **Power requirements:** 700 to 850 volts at 250 mA with .1% maximum ripple; 300 volts at 150 mA with .05% maximum ripple; −115 volts at 10 mA with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. (see fixed & mobile power supplies below). **Cabinet dimensions:** 6 5/16" H x 14 7/16" W x 13 3/8" D.

*Triple Action Level Control.

Heathkit HP-23B Fixed-Station Supply



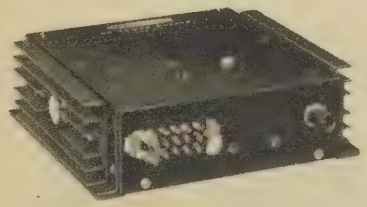
$57.95

Our popular fixed station power supply now features a higher voltage rating on B+ filter capacitors; improved filtering on bias voltage; fixed bias voltage, and heavier filament wires in the power cable. Now the popular Heathkit power supply is better than ever.

Kit HP-23B, Shpg. wt. 19 lbs. **57.95**

HP-23B SPECIFICATIONS

Power requirements: 120/240 VAC, 60/50 Hz, 350 watts maximum. **High voltage output:** 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple: Less than 1% @ 250 mA. Duty cycle: 150 mA continuous to 300 mA @ 50%. **Low voltage output:** (High tap) 350 VDC, no load; 300 VDC @ 150 mA ±10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA; ±10%. Less than .05% AC ripple @ 150 mA, continuous duty to 175 mA. **Fixed bias:** −130 VDC ±10%, no load; −100 VDC @ 20 mA. **Filament voltage:** 12.6 VDC @ 5.5 amps. **Dimensions:** 9" L x 4¾" W x 6¾" H.



Improved HP-13B Mobile Supply

The solid-state circuit has been further refined for improved starting and power transistor protection. The bias voltage is now fixed and we've put heavier wires in the filament leads of the power cable.

Kit HP-13B, Shpg. wt. 8 lbs. **84.95**

HP-13B SPECIFICATIONS

Input voltage: 12 to 16 VDC (neg. ground only). **Input current:** 25 amp. max. full load. **High voltage output:** 800 VDC, no load: 750 volts DC @ 250 mA. AC ripple: less than 1% @ 250 mA. **Low voltage output:** (high tap) 310 VDC, no load; 200 VDC @ 150 mA. (low tap) 265 VDC, no load; 250 VDC @ 150 mA. AC ripple: Less than .05% @ 150 mA. **Fixed bias:** −130 VDC @ 20 mA. **Dimensions:** 7¾" W x 7 5/16" L x 2⅜" D. All voltages referenced at 13 VDC.

Code is more fun than ever with





A hit with hams everywhere Heathkit HW-16 Transceiver **$129.95**

One of the world's most popular CW rigs — the Heathkit HW-16 belongs in the Ham Shack of every Novice or Pro

Easily one of the most popular Novice rigs in the industry, and for those who stay on the CW bands even after they obtain their full ticket — the Heathkit HW-16 remains a favorite. For many hams a used HW-16 first put them on the air. It's a rare amateur that hasn't operated one once in his career.

Why is the HW-16 so popular? The features speak for themselves. The Heathkit HW-16 offers: optimum CW operation on the first 250 kHz of the 80, 40 and 15 meter bands...true break-in capability with solid-state T/R switching...75 watt input for Novices, up to 90 watts for General and above...crystal-controlled transmit with VFO receive ...provision for VFO transmit with Heathkit HG-10B VFO...500 Hz CW selectivity with high quality crystal filter...receiver sensitivity better than 1 microvolt...built-in sidetone...front panel Relative Power/Plate Current meter. Final assembly and checkout requires only a VTVM, dummy load, key and appropriate crystals.

Assembly is easy and enjoyable too. The famous Heathkit manual guides you every step of the way with step-by-step instructions and large, easy to follow instructions. It's a great kit project, even for first-time builders.

Kit HW-16, Shpg. wt. 25 lbs. **129.95**

HW-16 SPECIFICATIONS

TRANSMITTER SECTION: RF Power Input: 50-90 W (adjustable). **Frequency Control:** 80 meter crystal or VFO on 80-meter band. 80- or 40-meter crystal, or VFO on 40-meter band. 40-meter crystal or VFO on 15-meter band. **Keying:** Grid-block. Break-in with automatic antenna switching and receiver muting. **Output Impedance:** 50 ohm unbalanced. SWR less than 2:1. **Sidetone:** Neon lamp relaxation oscillator. **RECEIVER SECTION: Sensitivity:** Less than 1 μV for 10 dB S+N/N. **Selectivity:** 500 Hz at 6 dB down. **Intermediate Frequency:** 3396 kHz. **Antenna Impedance:** 50 ohm, unbalanced. **External Speaker Impedance:** 8 ohm. **GENERAL: Frequency Coverage:** 3.5 to 3.75 MHz. 7.0 to 7.25 MHz. 21.0 to 21.25 MHz. **Power:** 120 VAC, 50-60 Hz. **Dimensions:** 6½" H x 13¾" W x 11½" D.



$49.95

Heathkit Solid-State Electronic Keyer

- ***Sends selectable 10-35 wpm for Novices or 10-60 wpm for "Pro's"***
- ***Iambic operation for fully formed characters with minimal wrist movement***

Sending code's easy with the HD-1410 whether you're operating base or portable. The dot and dash paddles' travel and tension are easily adjustable. When the two paddles are treated as one, the HD-1410 operates like a single-paddle keyer with dot and dash memories. Iambic operation forms most characters with reduced wrist movement. Dots and dashes are self-completing and always in proper proportion. During construction, you select the speed range you want — 10 to 35 words per minute or 10 to 60 words per minute. Operates on 120 VAC or 12 VDC. Adjustable sidetone frequency, built-in speaker, headphone jack.

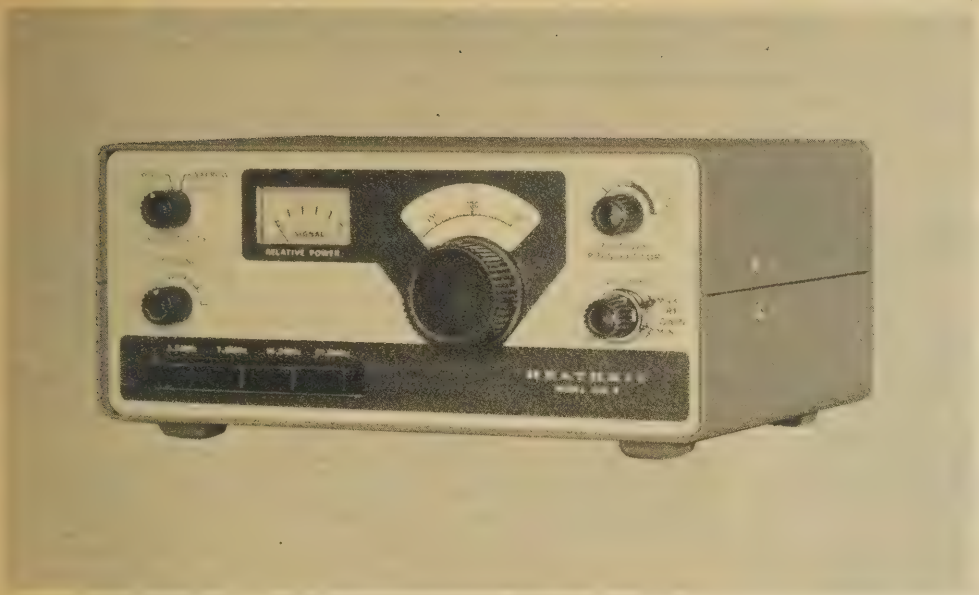
Kit HD-1410, Shpg. wt. 5 lbs. **49.95**

HD-1410 SPECIFICATIONS

Keying Output, Positive Line to Ground: max. voltage open circuit or spikes — 300 volts. Max. current — 200 mA. **Keying Output, Negative Line to Ground:** max. voltage open circuit or spikes — 200 volts. Max. current — 10 mA. **Audio:** internal speaker or jack for optional hi-Z (at least 500 ohms) headphones. **Sidetone:** adjustable from 500 to 1000 Hz. **Internal Controls:** sidetone frequency, paddle tension, paddle travel. **Rear Panel Connections:** AC power cord, 12-volt power input, keyer out, headphones, receiver audio in, ext. key. **Power Requirement:** 120/240 VAC (±10%), 60/50 Hz, 3.5 watts or 10-14.5 VDC, negative ground, 150 mA. **Dimensions:** approx. 3" H x 5" W x 7½" D. **Net Weight:** 3 lbs.

Find out how easy it is to build a kit — order the manual. See page 49.

these great CW kits from Heath



New

The HW-8 4-band QRP Transceiver — another Heath super value for Hams

$129.95

- ***Pushbutton selection of four bands***
- ***Crystal heterodyne circuitry — single dial***
- ***Super new receiver section with improved selectivity***
- ***Built-in VFO for outstanding stability***

Heathkit HW-8 — we've improved the world's most popular QRP Transceiver

We've made the world's most popular low-power CW transceiver even better! To the Heathkit HW-7 — we have added more bands, more features and a super new receiver section that's the best in its class. The famous HW-7 QRP Transceiver helped thousands of hams work the world on a couple of watts — and on a budget. Now, in the same value conscious tradition, Heath announces the HW-8.

Pushbuttons instantly select any of the four bands — 3.5-3.75; 7-7.25; 14-14.25 and 21-21.25 MHz. Crystal heterodyne circuitry allows easy frequency tuning with a *single* dial scale for all four bands, excellent stability and fixed CW offset. Other features include adjustable sidetone volume, relative power meter, diode band switching and break-in keying with adjustable T/R delay, and RF gain control.

The direct-conversion receiver boasts dramatically improved resistance to overload and reduced microphonics and hum thanks to a new RF amplifier stage and a two-position active audio filter. Its improved selectivity gives the HW-8 the finest receiver section in its price class. You get solid copy from all over with readable signals from as little as 0.2 μV; 1 μV or less produces 10 dB S+N/N!

The HW-8 can be operated from its optional AC power supply or 12 VDC — great for vacationing or emergencies. Has built-in headphone jack, adjustable AF gain, preselector and tune controls.

Now's the time to get into the fun and challenge of low-power CW operation. Order your HW-8 today.

Kit HW-8, Shpg. wt. 7 lbs. **129.95**
Kit HWA-7-1, AC Power Supply, Shpg. wt. 4 lbs. **14.95**

HW-8 SPECIFICATIONS

TRANSMITTER — DC Power Input: 3.5 watts (80 M); 3.0 watts (40 M); 3.0 watts (20 M); 2.5 watts (15 M). **Frequency Control:** built-in VFO. **Output Impedance:** 50Ω, unbalanced. **Spurious & Harmonic Levels:** —35 dB or better. **Offset Frequency:** approx. —750 Hz, fixed on all bands. **— RECEIVER — Sensitivity:** 0.2 μV for readable signal; 1 μV or less for 10 dB S+N/N. **Selectivity:** wide, —750 Hz @ —6 dB; narrow, —375 Hz @ —6 dB. **Audio Output Impedance:** 1000Ω, nominal.

GENERAL— Frequency Coverage: 3.5-3.75 (80 M); 7-7.25 (40 M); 14-14.25 (20 M); 21-21.25 MHz (15 M). **Frequency Stability:** less than 100 Hz/hour drift after 30 min. warmup. **Power Requirement:** 12-16 VDC, 90 mA, receive; 430 mA, transmit. **Dimensions:** 9¼" x 8½" x 4¼". **Net Weight:** 4 lbs.

Last call for HW-7 3-band QRP CW Transceiver
***Only* $89.95**
Limited Quantities still available.
See previous catalogs for full description

Heathkit Code Practice Oscillator

As much fun to build as it is to use — and it makes a great starter kit for a beginning CW operator. The molded plastic cabinet with dark green front panel matches Heathkit "SB" series gear.

Safe, portable and reliable, the HD-1416 is designed in the Heath tradition of top quality and value. Most components mount on a single circuit board for easy assembly. The unit operates from a single inexpensive 9-volt transistor battery (not supplied) and comes complete with telegraph key and phone jack. The oscillator, with built-in speaker, has a separate control for volume on the front panel — as well as a tone control accessible from the back of the cabinet. The HD-1416 can also be used as a side tone oscillator with any transmitter using grid block keying — such as the Heathkit DX-60B.

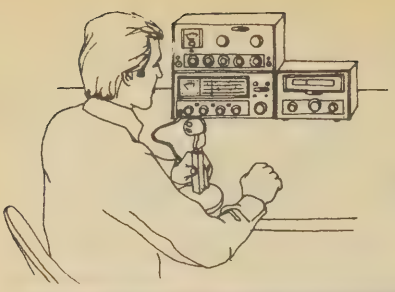
Kit HD-1416, Shpg. wt. 2 lbs. **9.95**

HD-1416 SPECIFICATIONS

Mode of Operation: Speaker or headphones. **Tone Frequency:** 200-800 Hz adjustable. **Battery Required:** 9-volt transistor battery equivalent Neda #1604 (not supplied). **Speaker:** 45 ohms. **Headphones:** 8-2000 ohms. **Sidetone Oscillator:** Grid block keying transmitters (400 volts DC, negative maximum). **Controls:** Volume, Tone (internal). **Front Panel Connections:** Key, Phone jack. **Transistors:** (2) MPSA20, (1) 2N5249. **Color:** Wrinkle grey and dark green.



$9.95



Quality ham radio starts here

HEATH charg-a-kit REVOLVING CHARGE

Your best value in ham radio starts with a do-it-yourself Heathkit rig. Communicate with the world...start yourself on a ham radio hobby today.



1

$109.95 EACH

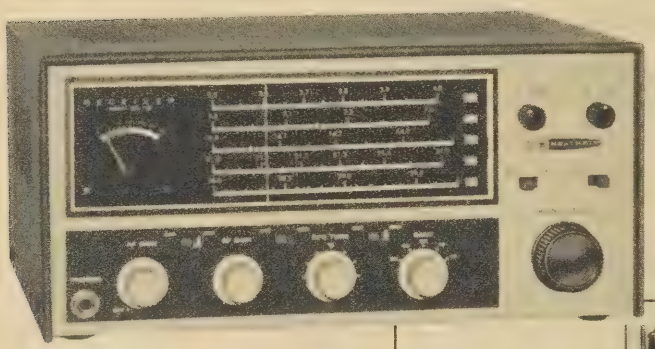
1 Phone & CW Transmitter runs up to 90 watts input

Run 75 watts CW input as a Novice . . . up to 90 watts phone or CW when you get your General ticket. Controls for Drive Tune, Drive Level, Final Loading & Final Tuning. Features include grid/plate current meter . . . 4 crystal sockets & provision for VFO operation . . . front panel microphone and key jacks. Requires VTVM for alignment.

Kit DX-60B, Shpg. wt. 24 lbs., less crystals **109.95**

DX-60B SPECIFICATIONS

Power input: 90 watts, peak; controlled carrier phone, or CW. **Output impedance:** 50-75 ohm (coaxial). **Output coupling:** Pi-network. **Operation:** CW or AM phone — crystal or VFO control. **Band coverage:** 80 through 10 meters. **Power requirements:** 120/240 VAC, 60/50 Hz, 225 watts. **Dimensions:** 6½" H x 13¾" W x 11½" D.



2

Optional plug-in crystal calibrator

2 5-band receiver tunes AM, CW & SSB

Full 80-10 M coverage. Separate RF and AF gain controls...adjustable BFO for easy sideband tuning. Sensitivity of 1 μV and 3 kHz selectivity from the crystal filter deliver outstanding reception. Features include built-in "S" meter...switchable AVC...front panel head phone jack...provision for optional HRA-10-1 100 kHz crystal calibrator. Alignment requires VTVM and RF signal generator.

Kit HR-10B, less speaker, Shpg. wt. 20 lbs. **109.95**
Kit HRA-10-1, plug-in 100 kHz crystal calibrator, Shpg. wt. 1 lb. . . **9.95**

HR-10B SPECIFICATIONS

Frequency coverage: 80 Meter Band, 3.5 to 4.0 MHz; 40 Meter Band, 7.0 to 7.3 MHz; 20 Meter Band, 14.0 to 14.35 MHz; 15 Meter Band, 21.0 to 21.5 MHz; 10 Meter Band, 28.0 to 29.7 MHz. **Sensitivity:** 1 microvolt for a 10 dB signal plus noise-to-noise ratio. **Selectivity:** 3 kHz at 6 dB down, 9 kHz at 40 dB down. **Image rejection:** 40 dB or better. **Input impedance:** 50 to 75 Ω coaxial. **Audio output impedance:** 8 Ω, or 500 Ω. **Panel controls:** AF GAIN, AC OFF-ON; RF GAIN; BFO TUNE; BAND Switch; MAIN TUNING; CALibrate; ANTenna TRIMmer; REC-STBY Switch; CALibrate ON-OFF; BFO On-Off; AVC On-Off: ANL On-Off. **Tube complement:** 6BZ6 RF Amplifier; 6EA8 Mixer Oscillator; 6BA6 1st IF Amplifier; 6EA8 2nd IF Amplifier-BFO; 6BJ7 Detector-AVC-ANL; 6EB8 1st Audio-Audio Output: 6x4 Rectifier. **Power requirements:** 120/240 VAC, 60/50 Hz, 50 watts. **Cabinet size:** 6½" H x 13¾" W x 11½" D.



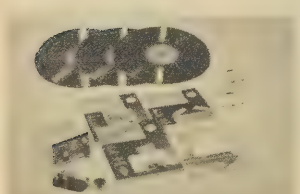
3

$64.95

3 Heathkit 80-2 meter VFO

Ideal for the HW-16 and DX-60B. Provides VFO control from 80 through 2 meters with separate calibrated scales for each band. Smooth 28:1 vernier tuning . . . temperature compensated circuitry for minimum drift. Provides 5 V rms at 3.4-4, 7-7.425 and 8-9 MHz range...compatible with virtually all grid-block keyed transmitters and most cathode-keyed transmitters. Alignment requires receiver of known accuracy covering 80-2 meter bands or 3.5 to 8.222 MHz.

Kit HG-10B, Shpg. wt. 12 lbs. **64.95**



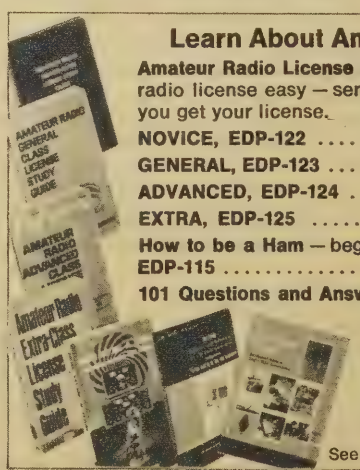
Ham starter group

Includes 4 ARRL handbooks, HD-1416 practice oscillator, 3 code-teaching records or two cassettes.

$19.95

HDP-22, Complete group with records, Shpg. wt. 6 lbs. . . **19.95**
HDP-122, Complete group with cassettes, Shpg. wt. 4 lbs. **19.95**
HDP-32, Records only, Shpg. wt. 3 lbs. **9.95**
HDP-132, Cassettes only, Shpg. wt. 2 lbs. **9.95**
HDP-42, Books only, Shpg. wt. 2 lbs. **4.00**
HD-1416, Oscillator & key, Shpg. wt. 2 lbs. **9.95**

Learn About Amateur Radio



Amateur Radio License Study Guides — makes getting any radio license easy — serve as a convenient reference after you get your license.

NOVICE, EDP-122 . . . . . **5.95**
GENERAL, EDP-123 . . . . . **7.95**
ADVANCED, EDP-124 . . . . . **5.95**
EXTRA, EDP-125 . . . . . **5.95**

How to be a Ham — beginner's guide to Amateur Radio.
EDP-115 . . . . . **3.95**

101 Questions and Answers About Amateur Radio — introduction for beginners, valuable reference for veterans.
EDP-118 . . . . . **2.95**

ARRL Amateurs Handbook — up to date info & theory.
HDP-293 . . . . . **6.00**

See page 48 for book ordering information.

Charge a kit — no money down on any kit — see page 50 for details.

Heathkit station accessories

Add more versatility to your line-up of SB transceivers and separates now with these exciting station accessories...

Heathkit solid-state Dip Meter delivers more performance at big savings

Another Heath value triumph — a better dip meter at lower cost. The Colpitts oscillator covers 1.6 to 250 MHz in fundamentals with a MOS-FET paraphase amplifier and hot-carrier diodes for more sensitivity and a better dip. It uses a Q-multiplier for greater detector sensitivity and a responsive 150 μA meter movement for positive resonance indications. It includes a phone jack for modulation monitoring. It's smaller and lighter than others, too. Completely portable. Whether you're checking resonant frequencies, adjusting traps, looking for parasitics, or using it as a signal generator, the HD-1250 is designed to go anywhere. It fits your hand and thanks to its solid-state design and 9-volt battery operation, it's ready to use instantly wherever you are. The custom molded gray carrying case protects the meter and the 7 color-coded, pre-adjusted, plug-in coils in transit, and makes a handy storage place.

Build it in one evening. Nearly everything mounts on two circuit boards. And when you finish, you'll have the best dip meter around — for a lot less money.

Kit HD-1250, less battery, Shpg. wt. 4 lbs. **59.95**



1 Heathkit Wattmeter/SWR Bridge

SWR bridge with adjustable sensitivity. Remote detector permits placement of meter in any location. Cable supplied.

Kit HM-102, Shpg. wt. 4 lbs. **34.95**

HM-102 SPECIFICATIONS

Frequency Range: 1.8 to 30 MHz. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Capability:** 10 to 2000 watts. **Impedance:** 50 ohm nominal. **Connectors:** UHF type SO-239. **Dimensions:** 5 1/16" H x 2¼" W x 6½" D.

2 Heathkit VHF Wattmeter

Built-in SWR bridge, adjustable sensitivity.

Kit HM-2102, Shpg. wt. 4 lbs. **34.95**

HM-2102 SPECIFICATIONS

Frequency Range: 50 MHz to 160 MHz. **Wattmeter Accuracy:** ±10% of full-scale.* **Power Capability:** To 250 W. **SWR Sensitivity:** Less than 10 W. **Impedance:** 50 ohms nominal. **SWR Bridge:** Continuous to 250. **Connectors:** UHF type SO-239. **Dimensions:** 5¼" W, 5 1/16" H and 6½" D, assembled as one unit. *Using a 50Ω noninductive load.

3 "Cantenna" dummy load

1 kW max input; 1.5-300 MHz w/SWR 1.5:1 or less. Oil not incl.

Kit HN-31, Shpg. wt. 3 lbs. **13.95**

4 Heathkit hybrid Phone Patch

Individual rcvr-line & line-rcvr gain controls; VU meter. 30 dB isolation. Matches 3-16 ohm speakers & hi-Z or 600 ohm inputs. VOX or PTT. 2⅝" H x 9¼" W x 3⅝" D.

Kit HD-15, Shpg. wt. 3 lbs. **36.95**

5 Heathkit RF Load/Wattmeter

Dummy load and wattmeter with high-temp lamp & lamp test circuit.

Kit HM-2103, Shpg. wt. 6 lbs. **59.95**

HM-2103 SPECIFICATIONS

Frequency Range: 1.8 to 30 MHz. **Wattmeter Range:** 0-200 and 0-1000. **Wattmeter Accuracy:** ±10% of full-scale reading. **Power Rating:** 175 watts continuous, 1000 watts maximum. **Overload Indication:** Thermal switch activated (requires 9 volt battery, NEDA #1604). **SWR:** Less than 1.2:1. **Load Type:** Noninductive. **Load Impedance:** 50 ohms nominal. **Connectors:** UHF type SO-239. **Dimensions:** 6" H x 5⅜" W x 13¾" D.

6 Heathkit Coax Switch

Switches RF source to any one of several antennas or loads; unused outputs grounded. Use two to switch up to four different transmitters, receivers, etc. 1.1:1 max SWR to 250 MHz. 2 kW PEP max. power rating.

Kit HD-1234, Shpg. wt. 2 lbs. **9.95**

7 Heathkit Desk Mike

Hi-Z dynamic; grip-to-talk. With cables.

HDP-121, Shpg. wt. 4 lbs. **39.95**

8 Heathkit Mobile PTT Mike

Rugged, hi-Z ceramic mike ideal for mobile work. With cable, less connector.

GH-12A, Shpg. wt. 1 lb. **10.95**

9 Heathkit Mobile Speaker

8 ohm speaker in rugged steel cabinet. Gimbal mount included. 6 11/32" W x 4¾" H x 2½" D.

Kit HS-24, Shpg. wt. 4 lbs. **12.95**



Helpful Ham Books



U.S. Callbook. EDP-126 .....**13.95**

DX Callbook. EDP-127 .....**12.95**

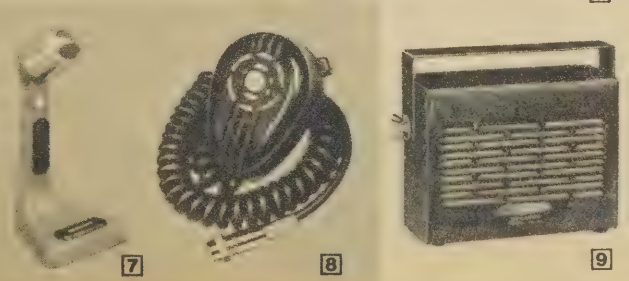
Amateur Tests and Measurements. EDP-119 .....**5.50**

91 Dipole and Long-Wire Antennas — data for 73 different antennas. **EDP-180**....**4.95**

73 Vertical, Beam and Triangle Antennas. EDP-181 .....**4.95**

ARRL Antenna Handbook. EDP-182....**4.00**

See page 48 for book-ordering information.



Listen in on the world...



Famous Heathkit check-by-step building instructions guide you easily through the assembly of this quality VHF/FM scanning monitor.

Heathkit VHF/FM scanning monitor lets you listen in on all the local action

Fire, police, emergency vehicle, marine, weather, amateur two meter FM, commercial radio, mobile and marine telephone calls...that's just some of the fascinating activity on VHF FM. And it's all yours with the Heathkit GR-110 scanning monitor.

Tunes any 9 MHz segment of the 146-174 MHz band, and you can listen to eight separate frequencies in use in your area (check state and local laws regarding use of monitors in vehicles in your locality). In the manual scanning mode you can manually select any channel from 0 through 7, with bright digital readout. The monitor stays locked on that frequency until you manually select another, or go to the automatic scanning mode. In automatic, the monitor rapidly scans all eight channels and locks on to the first one that starts a transmission. It will remain on that channel as long as a signal is present; when the signal stops, the monitor waits four seconds, then continues scanning. A priority channel "0" takes precedence over all other channels; the monitor will return to "0" whenever a station comes on that frequency, even though it might have already been locked on another channel. Front panel pushbuttons let you lock-out any channels, and the monitor automatically bypasses them as it scans.

Easy 4-evening assembly with the famous Heathkit manual, and during assembly you can wire the monitor to display the channel number only when it is locked on a frequency or continuously as it scans. Line cords and plugs for both 120 VAC and 12 VDC are provided.

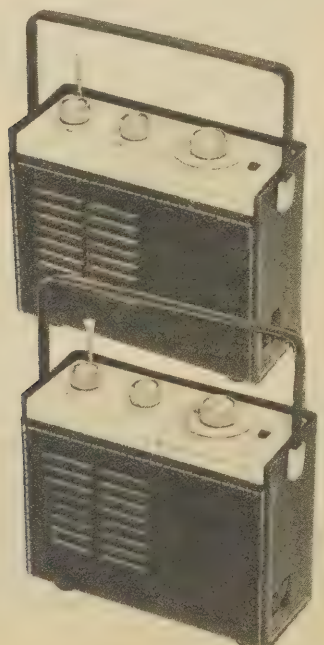
Features include built-in speaker plus external speaker jack...antenna jack...gimbal mount...complete front panel controls for volume, squelch, channel selection and scanning mode. Manual gives complete instructions on alignment and crystal ordering.

Kit GR-110, Shpg. wt. 9 lbs. **99.95**

GRA-110-1, Crystal Certificate, postpaid ..... each **4.95**

GR-110 SPECIFICATIONS

Frequency Range: 146 to 174 MHz. **Scanning Range:** Any 9 MHz segment of frequency range. **Sensitivity:** Less than 1 μV for 20 dB of quieting. **Usable Sensitivity:** Less than 0.5 μV. **Adjacent Channel Rejection:** —40 dB (±30 kHz spacing). **Intermediate Frequency (IF):** 10.7 MHz, crystal filter. **IF Rejection:** Greater than —80 dB. **Image Rejection:** Greater than —40 dB. **Modulation Acceptance:** 7.5 kHz maximum. **Antenna Input Impedance:** 50 ohms. **Scan Rate:** Approximately 17 channels per second. **Audio Output:** 2 watts into a 4-ohm load, with less than 10% distortion. **Solid-State Devices:** 29 transistors, 8 integrated circuits, 17 diodes. **Readout Device:** 3015A, 7-segment indicator tube. **Power Requirements:** AC: 120 volts, 50/60 Hz; 13 watts. DC: 13.8 volts. Squelched .275 amperes. Unsquelched with full audio, 9.8 amperes. **Dimensions:** 3″ H x 8¼″ W x 9¾″ D.



Portable VHF/FM monitors

Kit GR-88, VHF/FM Fire, Weather, Police Monitor, Shpg. wt. 5 lbs. **59.95**

Kit GR-98, Aircraft Monitor, Shpg. wt. 5 lbs. **59.95**

Kit GRA-88-1, AC power supply for both above, Shpg. wt. 2 lbs. **9.95**

GR-88 SPECIFICATIONS

Tuning Range: 152-174 MHz. **Antenna Input:** 50-75 ohms. **Sensitivity:** 2.0 μV or less for 20 dB quieting. **IF Frequency:** 10.7 MHz. **IF Selectivity:** ±40 kHz @ 6 dB down. **Image Rejection:** 40 dB or greater. **IF Rejection:** 80 dB or greater. **Audio Output:** 250 mW at less than 10% distortion. **Speaker:** 3″ round, 24-ohms, permanent magnet. **Batteries:** Six 1.5 V "C" cells, not supplied. **Dimensions:** 7½″ H x 8¾″ W x 3½″ D.

GR-98 SPECIFICATIONS

Tuning Range: 108-136 MHz. **Antenna Input:** 50 to 75 ohms. **Sensitivity:** 1.5 μV or less for 10 dB signal plus noise to noise @ 1000 Hz 30% modulation. **IF Frequency:** 10.7 MHz. **IF Selectivity:** 40 kHz @ 6 dB down; 100 kHz @ 30 dB down. **Image Rejection:** 40 dB or greater. **IF Rejection:** 80 dB or greater. **Audio Output:** 250 mW at less than 10% distortion. **Speaker:** 3″ round, 24 ohm, permanent magnet. **Batteries:** Six 1.5 V size "C" cells (not included). **Dimensions:** 7½″ H x 8¾″ W x 3½″ D.

Informative books on SWL

Shortwave Listener's Handbook — covers basic equipment to modifications for better listening, characteristics of receivers and antennas, schedules and reception reports, lists major shortwave stations by country and frequency. **EDP-196** **4.90**

ABC's of Shortwave Listening — programs available, how to get the most out of SW listening; advice on receivers & antennas in non-technical terms. **EDP-154**..... **3.50**

99 Ways to Improve your Shortwave Listening — antennas & their installation, receivers, accessories, listening techniques, special bands, troubleshooting. **EDP-155**.. **4.50**

How to Hear Police, Fire and Aircraft Radio — guide to VHF reception; home & mobile installations. **EDP-156** **3.50**

Dial 911 — emergency communications systems and surveillance techniques; specific information on New York City, Los Angeles & Philadelphia. **EDP-198** **3.95**

See page 48 for book ordering information.



Find out how easy it is to build a kit — order the manual. See page 49.

with Heathkit SWL gear



$159.95

Six bands...AM, SSB & CW reception... plus portability

The Heathkit GR-78 is a favorite of SWLs and hams...and it's loaded with features: 190 kHz to 30 MHz coverage in 6 bands...AM, CW and SSB reception...Automatic Volume Control...switched Automatic Noise Limiter...front panel "S" meter...500 kHz crystal calibrator...receiver/standby switch...muting connection...external antenna connection...headphone jack...built-in whip antenna. Kit includes nickel-cadmium battery with built-in charger.

Kit GR-78, Shpg. wt. 14 lbs. **159.95**

GR-78 SPECIFICATIONS

Frequency coverage: Band A, 190 kHz-410 kHz; Band B, 550 kHz-1300 kHz; Band C, 1.3 MHz-3.0 MHz; Band D, 3.0 MHz-7.5 MHz; Band E, 7.5 MHz-18.0 MHz; Band F, 18.0 MHz-30 MHz. **Meter:** Indicates relative signal strength. **Intermediate frequency:** Band A thru E: 455 kHz; Band F (Double conversion): 1st IF, 4.034 MHz; 2nd IF, 455 kHz. **Sensitivity*:** 0.2 μV—10 μV depending on band and portion thereof. **Selectivity:** 7.5 kHz ±1 @ 6 dB down. **Audio output:** 300 milliwatts @ 10% distortion. **Battery:** 9.6 VDC 500 mAh Nickel-Cadmium rechargeable. **Battery charge rate:** The battery is always being charged at 20 to 25 mA when the built-in trickle charging circuit is connected to an external power source with the Receiver turned off. A full battery charge will be maintained if the Receiver is connected to an external power source and used an average of 5 hours daily at normal listening level. **Overall size:** 6¼" H x 11½" W x 9" D.
*Signal level for 10 dB signal + noise/noise ratio.



$389.95

Our finest SWL receiver...the famous SB-313

Factory assembled & aligned Linear Master Oscillator for superior linearity, dial tracking and stability. Features include IC crystal calibrator for 25 & 100 kHz markers...three-position AGC...front panel "S" meter...RF attenuator...smooth, backlash-free tuning. Optional CW crystal filter available for optimum selectivity. Requires 8-ohm speaker or headphones plus VTVM and antenna for alignment.

Kit SB-313, Shpg. wt. 22 lbs. **389.95**

Kit SB-600, 8-ohm 6" x 9" speaker & cab., Shpg. wt. 7 lbs. **22.95**

SB-313 SPECIFICATIONS

Frequency Range (MHz): 3.5 to 4.0, 5.7 to 6.2, 7.0 to 7.5, 9.5 to 10.0, 11.5 to 12.0, 14.0 to 14.5, 15.0 to 15.5, 17.5 to 18.8, 21.3 to 21.8. **Intermediate Frequency (IF):** 3.395 MHz. **Frequency Stability:** Less than 100 Hz per hour after 10 minutes' warmup under normal ambient conditions. Less than 100 Hz drift for ±10% line voltage variation. **Sensitivity:** Less than 0.5 microvolt for 10 dB signal plus-noise to noise ratio for SSB operation. **Selectivity:** AM 5.0 kHz at 6 dB down, 15 kHz maximum at 60 dB down (crystal filter supplied). CW: 400 Hz at 6 dB down, 2.0 kHz maximum at 60 dB down (crystal filter available as an accessory). **Image Rejection:** 60 dB or better. **IF Rejection:** 3.395: Greater than 55 dB. 8.595: Greater than 40 dB. **Spurious Response:** All below 1 microvolt equivalent signal input except at 10.0 MHz and 15.375 MHz. **Dial Accuracy:**Electrical: Within 400 Hz after calibration at nearest 100 kHz point. Visual: Within 200 Hz. **Calibration:** Every 100 kHz or 25 kHz. **Dial Backlash:** No more than 50 Hz. **Antenna Input Impedance:** 50Ω nominal unbalanced. **Audio Output Impedance:** Matching Speaker: 8Ω. Matching Headphones: Low impedance. **Audio Output Power:** 4 watts at less than 10% distortion. **Muting:** Open external ground at Mute socket. **Power Requirements:** 105 to 130 or 210 to 260 volts, AC, 40 watts max. **Overall Dimensions:** 7¹⁵⁄₁₆" H x 12¼" W x 14" D.

Top-quality SWL Accessories

Superex headphones



Excellent for all Heathkit SWL receivers except GR-43A. Dual coils, wide headband, 600 ohms.

GD-396, Shpg. wt. 1 lb. **5.95**

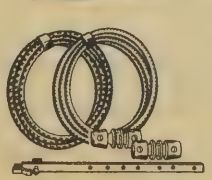
SWL guide



1975 edition lists call signs, frequencies and addresses for SW, FM and TV stations worldwide.

GDP-315, Shpg. wt. 2 lbs. **8.95**

Long-wire SWL antenna



75' long-wire antenna with 30' of lead-in, all insulators and hardware.

GRA-72, Shpg. wt. 2 lbs. **4.50**



$69.95

Low cost 4-band receiver

An ideal beginner's kit...an excellent receiver for the SWL fan. Four bands cover 550 kHz-30 MHz...slide-rule tuning with separate bandspread...variable BFO for clear CW reception...automatic noise limiting..."S" meter...built-in speaker and headphone jack.

Kit SW-717, Shpg. wt. 10 lbs. **69.95**

SW-717 SPECIFICATIONS

Frequency Coverage: Band A — 550 kHz—1500 kHz, Band B — 1.5—4 MHz. Band C — 4—10 MHz. Band D — 10—30 MHz. **Meter:** Indicates relative signal strength. **Headphone Jack:** Accents low impedance headphones or external speaker. **Loudspeaker:** Built-in. **Controls:** Volume with on/off switch; Mode (AM, Standby & CW); BFO; Main Tuning; Bandspread Tuning; ANL on/off. **Power Supply:** Transformer operated; full-wave bridge rectifier. **Voltage Requirements:** 120/240 VAC, 60/50 Hz, 8 W. **Dimensions:** 5⅓" H x 14½" W x 8" D.

Charge a kit — no money down on any kit — see page 50 for details.

Now buy world-famous Johnson CB at Heath

$159.95



The low-priced Messenger 123A

Hundreds of thousands chose this model as the best CB value! Proven 100% solid-state chassis has speech compression for extra transmit range. To cut noise and interference there's an automatic noise limiter, "steep skirt" mechanical selectivity filter and acoustically isolated speaker. Lighted meter shows relative transmitter output and received signal strength.

23 channels and maximum legal power. 4 watts output, full band coverage, FCC type accepted, and fully assembled — ready to go anywhere. Just 2½" h x 6¾6" w x 9⅝" d and operates on 12 VDC neg. ground power. For base station use, just add the optional desk stand/AC supply. Includes microphone, mounting bracket and instructions.

Model GWP-100, Shpg. wt. 6 lbs. Assembled. **159.95**

Model GWP-100-1, AC supply, Shpg. wt. 4 lbs. **37.50**

$244.90

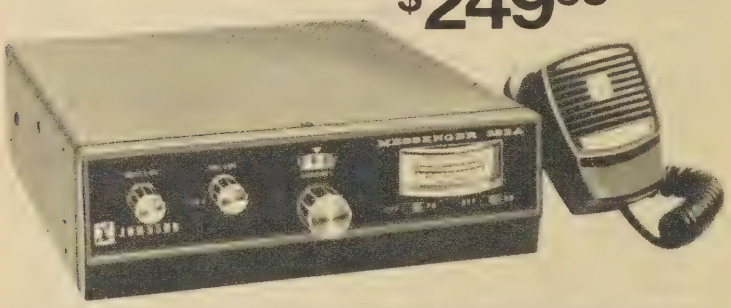


Base-Station Messenger 250

Superb base station... 100% solid-state design with unparalled power and efficiency plus sophisticated styling. Large professional controls and lighted metering put real operating convenience on your desktop. Electronic speech compression for extra transmit range, plus special voice-tailored audio for crisp, clear reception. Covers all 23 channels with 4 watt output. FCC Type Accepted. Measures 5¾6" h x 11" w x 9¹³⁄₁₆" d. Brown and beige color with walnut grain vinyl front panel insert. Operates on 117 VAC. Includes hand held microphone.

Model GWP-102, Shpg. wt. 16 lbs. Assembled. **244.90**

$249.95



The best mobile we sell—Messenger 323A

Breakthrough in design...unitary conversion with dual cascade crystal filtering for spectacular freedom from interference. A separate noise blanker can be switched on to cut troublesome ignition pulse noise. An automatic noise limiter switches on when noise is present and off when not needed for maximum fidelity. An extra feature is its built-in PA function. Full 23 channel coverage; 4 watts output; FCC Type Accepted; hand held mike included. Size: 2½" h x 8" w x 9½" d; requires 12 volts DC power, positive or negative ground. Order AC supply to operate as base station.

Model GWP-101, Shpg. wt. 9 lbs. Assembled **249.95**

Model GWP-101-1, AC supply, Shpg. wt. 5 lbs. **46.50**

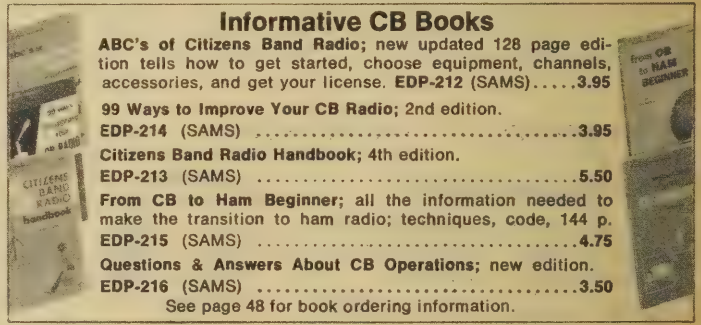
CB Antennas

Antenna Specialists M-117 "Super Magnum" Base Antenna
½ wave end-fed design gives 3.75 dB gain across entire band. Exclusive noise reducing design with DC grounded coil improves signal-to-noise by 6 dB. Exclusive curved static-reduction ball at top. Easy to install.
Model GDP-2120, Shpg. wt. 10 lbs. **39.95**

Antenna Specialists M-176 "Quick-Grip" Mobile Antenna
Trunk lid mount (no holes to drill) with stainless steel whip and shock spring; 46" high; weatherproof loading coil, DC grounded with 17' coax.
Model GDP-2121, Shpg. wt. 3 lbs. **26.95**

Antenna Specialists MR-180 "Flipper" Mobile Antenna
Rain-gutter mount (no holes to drill) with center loaded whip and fine tuning ball tip. Chrome plated clamp and fittings. With 10' coax.
Model GDP-2122, Shpg. wt. 3 lbs. **22.95**

Informative CB Books



ABC's of Citizens Band Radio; new updated 128 page edition tells how to get started, choose equipment, channels, accessories, and get your license. **EDP-212** (SAMS).....**3.95**

99 Ways to Improve Your CB Radio; 2nd edition.
EDP-214 (SAMS) **3.95**

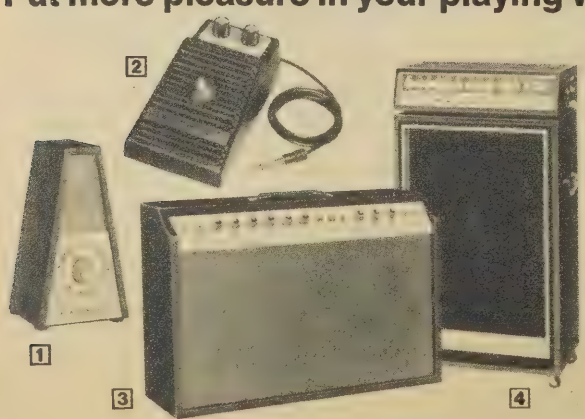
Citizens Band Radio Handbook; 4th edition.
EDP-213 (SAMS) **5.50**

From CB to Ham Beginner; all the information needed to make the transition to ham radio; techniques, code, 144 p.
EDP-215 (SAMS) **4.75**

Questions & Answers About CB Operations; new edition.
EDP-216 (SAMS) **3.50**

See page 48 for book ordering information.

Put more pleasure in your playing with Heathkit musical accessories



1 Electronic Metronome

Adjustable from 40 to 210 beats per minute. Volume control. Chart relates tempos to beats per minute. One evening assembly. Requires two 9V batteries.

Kit TD-17, Shpg. wt. 2 lbs. **16.95**

2 Here comes the "fuzz"

Add fuzz to your music. Just plug between your guitar and amp. Press footswitch once to turn it on—again to play it straight. Tone, distortion controls. Runs on penlite cell (not supplied).

Kit TA-28, Shpg. wt. 4 lbs. **24.95**

3 25-watt Guitar Amp

25 watts EIA music power. Has 2 dual input channels, double spring variable reverb and tremolo (with footswitches); 2 heavy-duty 12" speakers. ¾" wood cabinet measures 28" W x 9" D x 19¾" H.

Kit TA-16, Shpg. wt. 48 lbs. **139.95**

4 Our best Guitar Amp

120 watts EIA music power. Full controls. Harmonic modifier for "fuzzy" sound. Spring-type variable reverb. 3 channels, 2 inputs for each. Optional speaker has two 12" woofers & horn driver. 25⅞" W x 14½" D x 38" H. Includes 20' cable.

Kit TA-17, amplifier only,
Shpg. wt. 40 lbs. **199.95**

Kit TA-17-1, One speaker system,
Shpg. wt. 112 lbs., Exp./Frt. **189.95**

Charge a kit — no money down on any kit — see page 50 for details.

Build a quality PA System for your club or organization and SAVE

- **SCHOOLS** *Auditoriums, Quadrangles, Lecture Halls, Football Fields*
- **CHURCHES** *Meeting Halls, Chapels, Parking Lots, Outdoor Events*
- **BUSINESSES** *Conference Rooms, Trade Shows, Display Areas*
- **PERFORMERS** *Supply Your Own Sound System for Clubs and Halls*



Save $49.90

Complete PA System

- *TA-1620 Control Amplifier*
- *Two TS-1630 Speaker Columns*

If purchased separately, $849.85

Heath Price $799.95

1 TA-1620 PA Control Amplifier

- ***Offers complete control and system flexibility — add as many booster amplifiers and speakers as you need for the power and coverage you want***

The TA-1620 PA Control Amplifier has the versatility and flexibility you need for virtually any audience coverage situation—church, fraternal hall, auditorium, school, outdoors—it's ideal for portable or permanent installation. And it's about HALF the cost of comparable assembled units! Six fully mixable low-impedance inputs, each with bass, treble, reverb on-off and attenuation controls handle anything from individual lecturers to groups of performers. Special filtering circuits optimize response for both voice and music. The complete reverb system even allows special musical effects from any or all of the inputs. Switchable filters for low, mid-low, mid-high and high frequencies minimize feedback, and exclusive Heath bass filter virtually eliminates the "boominess" of cardioid mikes used close up. The built-in amplifier delivers 100 watts continuous power to two speaker columns. You can add as many booster amplifiers and speakers as you need for complete area coverage — even interconnect more control amplifiers for additional inputs. The well-lighted, "human-engineered" control panel, and heavy-duty conservative design make this a PA amplifier you'll use and appreciate for years to come. Rugged particle board case covered with gray high-pressure laminate with protective aluminum edge guard strips and convenient recessed handles. A level/test meter checks your work during assembly.

Kit TA-1620, Shpg. wt. 53 lbs. **449.95**

2 Low-Distortion Booster Amplifier

The same amplifier circuitry as the TA-1620—100 watts continuous into two TS-1630 Speaker Columns. And we think it's the quietest, lowest-distortion booster amp you can buy. Takes its signal from the Control Amplifier or, to eliminate long cable runs, it can take its signal from the extra rear-panel jack on a speaker column—a Heath exclusive. A lighted meter monitors the output, a level control adjusts the volume. Includes particle board end panels covered with gray high-pressure laminate.

Kit TA-1625, Shpg. wt. 23 lbs. **179.95**

3 Hi-Fi Speaker Column

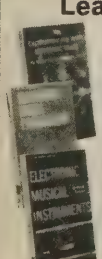
One of the world's best PA speakers. Six 8″ full-range speakers are response-tailored for clean voice reproduction with excellent dispersion. An output jack lets you drive a TA-1625 Booster Amp or connect two Speaker Columns in parallel. Particle board enclosure covered with gray high-pressure laminate includes side-mounted handle and aluminum edge guard strips. With 50′ cable, storage compartment. Removable dark brown grille cloth.



Kit TS-1630, Shpg. wt. 112 lbs., Exp./Frt. .....**each 199.95**

TAA-1620-3 Distribution Transformer. Minimizes signal loss in long runs of speaker cable. Provides 100W, 70.7 V balanced line from TA-1620 or TA-1625. 6 ohms. Shpg. wt. 8 lbs. **26.95**

Learn About Electronic Music



Experimenting with Electronic Music — from sine-wave generators to synthesizers. **EDP-209** (Tab) ..**4.95**

Electronic Music Production — how to use ring modulators, multivibrators, etc. For special effects. **EDP-210** (Tab) **3.95**

Electronic Musical Instruments — from amplification to synthesizers. Includes troubleshooting guide. **EDP-211** (Tab) **4.95**

See page 48 for book ordering information.

COMPLETE SYSTEM SPECIFICATIONS

TA-1620 SPECIFICATIONS — **Frequency Response:** 40-15,000 Hz, ±2 dB. **Power Output:** 100 watts continuous at 6 ohms (two columns) before clipping. **Total Harmonic Distortion:** 2% or less. **Hum and Noise:** —60 dB. **Sensitivity:** Mike, 2.5 mV rms (20 mV rms, attenuator in); high-level 250 mV rms. **Input Impedance:** Microphone, balanced 600 ohms (nominal); Hi-Level unbalanced 1 megohm. **Gain:** Microphone, 80 dB (62 dB with attenuator in); Hi-Level, 40 dB. **Mike Inputs:** Switchcraft QG jacks, compatible with Cannon plugs. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 11¼″ H x 21½″ W x 12″ D. **Net Weight:** 36 lbs.

TA-1625 SPECIFICATIONS — **Frequency Response:** 20-20,000 Hz, +1 dB. **Power Output:** 100 watts continuous at 6 ohms (two speaker columns) before clipping. **Input Sensitivity:** 650 mV rms for rated output. **Total Harmonic Distortion:** less than 0.5% at full output. **Hum and Noise:** —80 dB referred to full output. **Input Impedance:** 30 K ohms; 1 K ohm when switched to speaker input. **Gain:** 30 dB. **Power Requirement:** 120/240 VAC, 60/50 Hz. **Dimensions:** 6⅛″ H x 21″ W x 7″ D. **Net Weight:** 25 lbs.

TS-1630 SPECIFICATIONS — **Frequency Response:** 70-8000 Hz. **Power Handling:** 60 watts continuous. **Nominal Impedance:** 12 ohms. **Dimensions:** 62″ H x 14″ W x 10¼″ D. **Net Weight:** 85 lbs.

Heathkit Continuing Education Series — Knowledge is at hand!



These Heathkit Programs provide a detailed overview of contemporary electronics for everyone from beginners to experienced engineers.

With the introduction of the Heathkit Continuing Education Series, Heath offers you the opportunity to easily keep pace with the changing, complex world of electronics — and improve your technical competence. Learning is easy and inexpensive with these programs.

All Heathkit Individual Learning Programs (ILP's) are self-instructional electronics programs designed to allow thorough, independent study at your own pace. This is your own personal program with no school and no admission requirement. You study when you want to, for as long as you want to. Should you choose to submit the optional final exam, a passing grade will bring you a Certificate of Achievement and Continuing Education Units (CEU). Continuing Education Units are a nationally recognized means of acknowledging your participation in non-credit adult education programs.

The ILP system teaches subjects thoroughly and efficiently. Comprehensive learning materials integrated with programmed instruction lessons and kit experiments lead you step-by-step to a thorough knowledge of electronics. Self-evaluation quizzes help check your progress.

Each Individual Learning program incorporates a variety of printed materials and experiments with audio records, to provide an overview of the subject and periodic reviews of pertinent topics.

Each subject is reinforced by actual "hands on" experience to help you learn, and give practical applications of the subject.

The Experimenter Trainers help you perform experiments as you study. They have solderless sockets for fast connections and provide built-in power supplies, signal sources and controls. After completing the programs, use the trainers for breadboarding your own design projects.

As the Continuing Education Series expands, it will include other programs, providing a complete overview of the fundamentals of contemporary electronics. Descriptions of the first programs in this exciting series are on the following pages.

For information on educational or quantity discounts, see page 48.

Electronics Fundamentals—3 Basic Programs



Buy all three programs with the ET-3100 trainer and SAVE $24.85

$154.95 Complete

$179.80 if purchased separately

These basic electronics programs take you step by step through the fundamentals of electronics. You proceed at the rate you wish, study completely at your leisure. All three programs require a Heath IM-17 VOM or equivalent, soldering iron, small tools, record player and Heathkit experimenter/trainer. Each program (or equivalent knowledge) is a prerequisite for the next.

Part 1: DC Electronics — electrical fundamentals, theory and practice — a perfect introduction to the subject

1. *Electron Theory*
2. *Voltage*
3. *Resistance*
4. *Ohm's Law*
5. *Magnetism*
6. *Electrical Measurements*
7. *Network Theorems*
8. *Inductance and Capacitance*

Includes all texts, records, 56 parts for 20 experiments. Av. completion time, 20 hours. 2.0 CEU and certificate for passing optional exam.

Model EE-3101, Shpg. wt. 6 lbs. **39.95**

Kit ET-3100, Experimenter/Trainer, Shpg. wt. 6 lbs. **59.95**

EE-3101 & ET-3100 together, 17 lbs. . . **89.95**

Part 2: AC Electronics—sine waves, inductive and capacitive reactance, impedance, phase shift, transformers and filters

1. *AC Fundamentals*
2. *AC Measurements*
3. *Capacitive Circuits*
4. *Inductive Circuits*
5. *Transformers*
6. *Tuned Circuits*

Includes all texts, records, 34 parts for 8 experiments. Av. completion time, 15 hours. 1.5 CEU and certificate for passing optional exam.

Model EE-3102, Shpg. wt. 6 lbs. **39.95**

Kit ET-3100, Experimenter/Trainer, Shpg. wt. 6 lbs. **59.95**

EE-3102 & ET-3100 together, 17 lbs. . . **89.95**

Part 3: Semiconductor Devices — transistors, zeners, SCR's, FET's, digital and linear IC's, LED's, opto-electronics

1. *Fundamentals*
2. *Diodes*
3. *Zener Diodes*
4. *Special Diodes*
5. *Bipolar Transistor Operation*
6. *Bipolar Characteristics*
7. *FET'S*
8. *Thyristors*
9. *IC's*
10. *Optoelectronic Devices*

Includes all texts, records and 11 parts for 27 experiments. Av. completion time, 30 hours. 3.0 CEU and certificate for passing optional exam.

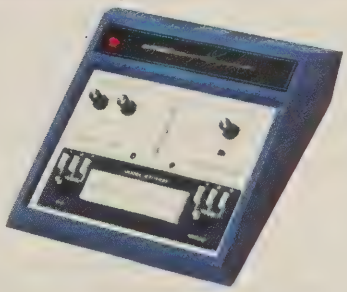
Model EE-3103, Shpg. wt. 6 lbs. **39.95**

Kit ET-3100, Experimenter/Trainer, Shpg. wt. 6 lbs. **59.95**

EE-3103 & ET-3100 together, 17 lbs. . . **89.95**

Coming Soon — Part 4: Electronic Circuits and Applications

Heathkit Experimenter/Trainer



For the Heathkit Fundamental programs—helps you perform each project quickly and easily. And after you finish the programs, it's ideal for "breadboarding" your own design projects. Has solderless breadboarding sockets for fast, easy component connections, 2-range variable sine and square wave signal source, dual-variable power supplies for positive and negative voltages (both variable over 1.2 to 16 volts, current rating 120 mA, both regulated and short-circuit protected). Built-in 1k and 100k linear potentiometers. Center tapped power transformer secondary provides 30 V rms, 60 Hz for line experiments.

Kit ET-3100, Shpg. wt. 6 lbs. **59.95**

ETS-3100, All three programs and trainer, Shpg. wt. 44 bs. **154.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Digital Techniques—An Advanced Program



For the experienced technician, engineer or experimenter

Learn digital fundamentals, circuit design, TTL, ECL, CMOS, PMOS, NMOS integrated circuits; SSI, MSI and LSI; ROM's, PLA's; microprocessor theory

1. ***Introduction: techniques and uses, binary numbers, digital codes.***
2. ***Semiconductor Devices for Digital Circuits.***
3. ***Digital Logic Circuits: AND gates, OR gates, NAND/NOR logic, etc.***
4. ***Digital Integrated Circuits: TTL, ECL, CMOS, nMOS, pMOS, how to choose.***
5. ***Boolean Algebra.***
6. ***Flip-Flops and Registers: latches, D & JK flip-flops, storage registers, applications.***
7. ***Sequential Logic Circuits: binary, BCD, modulo N, up/down, counters, dividers, shift registers.***
8. ***Combinational Logic Circuits: encoders, decoders, exclusive OR, comparators, multiplexers, ROM's, PLA's.***
9. ***Digital Design: combinational and sequential circuits, procedures.***
10. ***Digital Applications: counters, computers, microprocessors.***

Update your knowledge of electronics with this program in digital fundamentals. Provides a solid background with particular emphasis on circuit design. Covers the latest integrated circuits; ROM's and PLA's; even microprocessors. Helps you learn to design digital circuits for virtually any application.

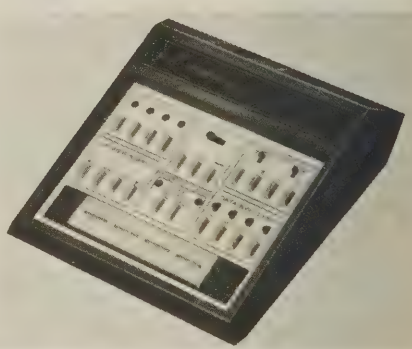
The program assumes a prior knowledge of electronics fundamentals, either completion of the Heathkit basic electronics programs or equivalent knowledge. It can be successfully completed by most technically oriented people with a math or science background.

The program includes all texts, records and 44 parts for 24 experiments. Av. completion time: 40 hours. Credit: 4.0 CEU and certificate for passing optional exam.

Model EE-3201, Shpg. wt. 9 lbs. **49.95**

Kit ET-3200, Experimenter/Trainer, Shpg. wt. 6 lbs. **69.95**

EE-3201 & ET-3200 together, Shpg. wt. 20 lbs. **109.95**



Heathkit Digital Design Experimenter/Trainer

Use it to perform all the experiments in the Heathkit Digital Techniques Program, also to develop projects, build and test prototypes, verify circuit operation, check digital IC's. Has solderless breadboard sockets, four binary data switches, 2 "no-bounce" switches to pulse logic circuits, 3-frequency pulse clock generator, 4 LED's for visual indication of logic states. Three regulated power supplies: +12 V, 100 mA current limited; −12 V, 100 mA current limited; +5 V, 500 mA, overload protected. Accommodates up to eight 14 or 16-pin dual-in-line IC's, also 24, 28 and 40-pin DIP's.

Kit ET-3200, Shpg. wt. 6 lbs. **69.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Build a Lifetime of Music Entertainment





For family fun, for musical entertainment and education, for sheer pleasure, there's nothing more rewarding than a Heath/Thomas Organ



$549.95

HEATH charg-a-kit REVOLVING CHARGE

from $1145

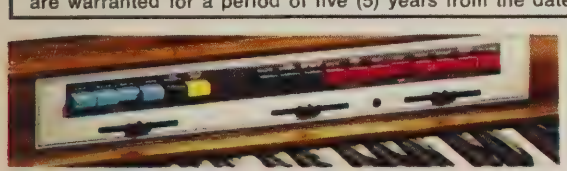
Heathkit/Thomas Spinet — exciting performance at a budget price

You get more value for your money with our TO-1160 — two 44-note overhanging manuals with tilted keys, 13-note radial arc pedal rack, 25-watt RMS amplifier and wide-range 12″ speaker. And with exclusive Color-Glo keys and our "Quick-Play" organ course, you'll be playing complete songs the first time you sit down. Fingertip controls include a Variable Pedal Volume, Variable Manual Balance; switch tabs for Vibrato, and a new Light Vibrato that gives true orchestral effects. Accessory front-panel on the keyboard has earphone and cassette recorder jacks and an AC power outlet. Plugging in the earphones defeats the main speaker to let you practice anytime without disturbing the rest of the family. Just use a conventional cassette deck to play lessons through the organ, or record your own organ selections on blank cassettes. On the upper manual are Flute 16′, 8′ and 4′; Trumpet 8′; Oboe 8′; and Violin 8′. The lower manual provides Horn 8′; Diapason 8′; Melodia 8′ and Cello 8′. The pedal rack has a Flute 16′-8′ combination. Add the Rhythm Section (below) for even more versatility. Cabinet and bench are handcrafted from selected walnut veneers in a Scandia finish, with solid hardwoods at all points that require strength and rigidity. Has plastic woodgrain decorative trim. Assembled, finished cabinet. 44″ H x 43½″ W x 25″ D.

Kit TO-1160, Shpg. wt. 233 lbs. **549.95**

SPECIAL ORGAN WARRANTY

The tone generators of the Heathkit/Thomas organs on these pages are warranted for a period of five (5) years from the date of purchase.



Add "Rhythm Section" versatility to your organ

Touching a button adds automatic bass patterns, alternating bass pedal notes, complete drum section, piano, guitar, banjo or harpsichord accompaniment and your choice of 8 rhythm patterns.

Kit TOA-60-1, Shpg. wt. 5 lbs. **279.95**

This Heathkit/Thomas Spinet Organ puts an orchestra in your home

The TO-1260 is our most versatile organ, yet exclusive Color-Glo keys will have you playing complete songs in just minutes. And the Thomas Organ Course included with the TO-1260 is almost like having your own music teacher. A breathtaking range of voices helps you create exciting orchestral effects. And the optional TOA-60-1 (below) lets you add your own "Rhythm Section" for even more fun. It lets you add any of 8 preprogrammed rhythm patterns; piano, guitar, banjo or harpsichord accompaniment on the lower manual; alternating bass pedal notes to fit the rhythm pattern you're using and more. In addition to two 44-note overhanging manuals with tilted keys, the TO-1260 features a 13-note radial arc pedal rack, two 25-watt RMS amplifiers and two 12″ speakers. A convenient accessory panel lets you plug in headphones for silent practice, use an external tape deck to play or record, or plug in an external tone cabinet. The handsome cabinet comes completely assembled and finished in your choice of Contemporary or Mediterranean styles. The cabinets are handcrafted using furniture-grade hardwoods with decorative plastic trim and are finished in hand-rubbed walnut (distressed antique in the Mediterranean).

Kit TO-1260M, Mediterranean, Shpg. wt. 255 lbs. **1195.00**

Kit TO-1260W, Contemporary, Shpg. wt. 247 lbs. **1145.00**

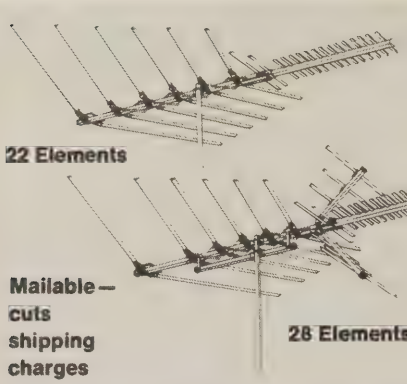
TO-1260 SPECIFICATIONS

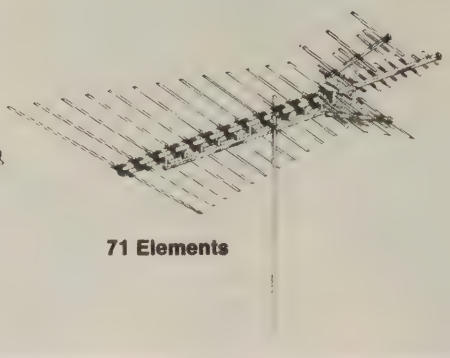
VOICES: UPPER KEYBOARD (Solo): Flute 16′ Flute 8′, Flute 4′, Trombone 16′, Bassoon 16′, Trumpet 8′, Diapason 8′, Clarinet 8′, Oboe 8′, Violin 8′, Mando (Pre-Set), Harpsichord (Pre-Set), Piano (Pre-Set), Accordion (Pre-Set). LOWER KEYBOARD — (Accomp.): Tuba 8′, Diapason 8′, French Horn 8′, Melodia 8′, Cello 8′. PEDAL KEYBOARD — Bourdon 16′, Major Flute 8′, String Bass 8′. **CONTROLS:** Solo — Bright, Accomp. — Bright, Solo Sustain — Long, Auto — Sostenuto, Solo O — Tremulant, Solo Flute — Tremulant Accomp. ◻—Tremulant, Pedal Sustain — On/Off, WAH WAH — On/Off, Variable Slide — Pedal Volume, Variable Slide — Reverb Balance, Variable Slide — Percussion Volume, Variable Slide — Manual Balance, Expression Pedal. **Dimensions:** 37½″ H x 44″ W x 23½″ D.

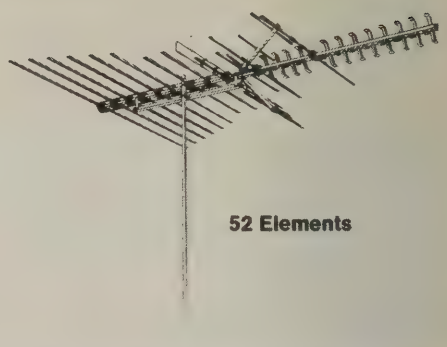
TOA-60-1 SPECIFICATIONS

PRE-PROGRAMMED RHYTHM PATTERNS: Waltz, Fox Trot, Rock, Soul, Polka, Samba, Bossa Nova, Rhumba. **Controls:** Drums (On/Off), Tempo, Volume. **RHYTHM VOICES:** Add Cymbal, Snare/Tom Tom. **FANCY FOOT:** (Alternating bass pedal notes that fit into rhythm pattern chosen — automatic when foot pedal is held). **Control:** Syncopated or Alternating Bass. **PRE-SET ACCOMPANIMENT — Voices:** Piano (Pre-Set), Guitar (Pre-Set), Harpsichord (Pre-Set). **Controls:** ACC Pre-Sets (On/Off), Volume.

Quality antennas and accessories from Heath







"Fringe" Antenna

22-element antenna provides VHF reception up to 75 miles and UHF up to 45 miles. 119″ boom, 68″ turning radius.

GD-1431, 300 ohm, less mast and cable.
Shpg. wt. 8 lbs. **29.95**
75 ohm **34.95***

Deluxe "Fringe" Antenna

Has 28 elements, pulls in signals even in problem reception areas. Provides VHF reception up to 100 miles, UHF up to 60 miles. 131″ boom, 80″ turning radius.

GD-1441, 300 ohm, less mast and cable.
Shpg. wt. 10 lbs. **39.95**
75 ohm **44.95***

"Super" Antenna

A real signal-grabber—provides optimum reception even in the deepest fringe areas. Has 71 elements (26 on VHF, 13 driven; 45 on UHF, 1 driven). Outstanding front-to-back signal rejection; VHF Lo and Hi Band, 23 dB; UHF, 24 dB. Beam width: VHF Lo, 68°; Hi, 33°; UHF, 30°. 196″ boom, 116″ turning radius, 166″ width. All aluminum construction with gold color, weather-protected finish.

GD-1460, 300 ohm; less mast and cable.
Shpg. wt. 24 lbs. Exp./Frt. **89.95**
75 ohm **94.95***

*Order GD-298 and GD-1054 to convert to 75 ohms. ***Reg. $8.90—only $5 with antenna.***

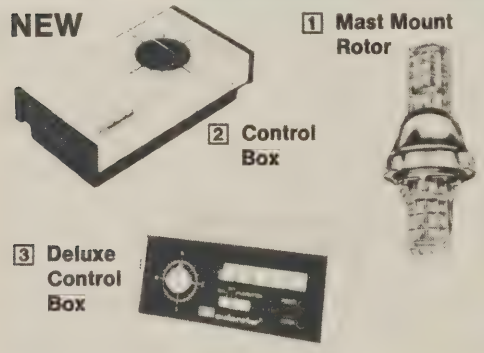
"Deep-Fringe" Antenna

Does the job anywhere but the farthest "boonies". Really reaches out with its 52 elements (18 on VHF, 9 driven; 34 on UHF, 1 driven). Front-to-back signal rejection of 20 dB on VHF Lo and Hi band; 22 dB UHF. Beam width: VHF Lo, 68°; Hi, 33°; UHF, 30°. 149″ boom; 82″ turning radius; 102″ wide. All aluminum construction with gold color weather-protected finish.

GD-1450, 300 ohm, less mast and cable.
Shpg. wt. 19 lbs. Exp./Frt. **57.95**
75 ohm **62.95***

All antennas include removable FM blocking elements.

NEW



Cornell-Dubilier Heavy-Duty Auto-Rotor Systems

NEW! Antenna rotor system consists of units 1 & 2 shown at left. Pin-points your outdoor antenna for dramatically improved TV and FM reception. Heavy-duty 1 rpm rotor has positive automatic stop, instant reverse. ½″ diameter ball thrust bearing supports antennas to 150 lbs. Lower mast clamp accepts ⅞″ to 2″ diameter masts and is removable for direct mounting on rotor plate of tower. Lifetime lubricated bearings. Solid-state control box has 360° rotor control, plugs into AC outlet. Requires 5-wire cable (not supplied).

GDP-1176, Shpg. wt. 14 lbs. **54.95**

Deluxe antenna-rotor system consists of units 1 & 3 shown at left. Features solid-state rotor control with five pre-set push-buttons for instant antenna heading on your favorite stations. Also has manual directional control. Requires 5-wire cable not supplied.

GDP-258, Shpg. wt. 16 lbs. **64.95**



Coaxial distributor for 4-room TV/FM network—Takes single coax input from all-channel antenna, amplifies it to feed 4 wall outlets. Includes 200′ coax cable, connectors, crimping tool, 4 matching transformers/splitters.

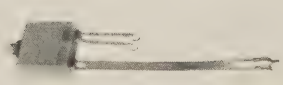
GD-248, 14 lbs., mailable **89.95**
GD-328, 100′ coax, w/connectors and antenna boot installed, 5 lbs., mailable **13.95**



FM Coupler, takes FM signal off coax ahead of TV set.
GD-308, 1 lb., mailable . . . **12.95**

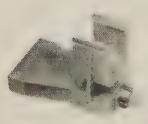


75-Ohm Mixer-Splitter. Operate 2 sets from one coax or combine two coax leads.
GD-318, 1 lb., mailable . . . **9.95**



75/300 Ohm Transformer-Splitter matches one 75 ohm coax to separate VHF, UHF 300 ohm leads.

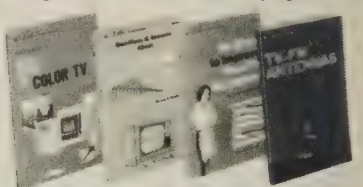
GD-298, 1 lb., mailable **4.95**



All-Channel Matching Transformer snaps on antenna, converts 300 ohms to 75 ohms for coax.

GD-1054, 1 lb., mailable **3.95**

These informative books will help you get more TV enjoyment.



Easi-Guide to Color TV—buying a set, installing the antenna, adjustments.
EDP-128 . . . . . **3.50**

Questions and Answers About Color TV—covers operation, installation, servicing.
EDP-129 . . . . . **3.95**

99 Ways to Improve Your TV Reception. Emphasis on antenna & lead-in problems.
EDP-130 . . . . . **3.50**

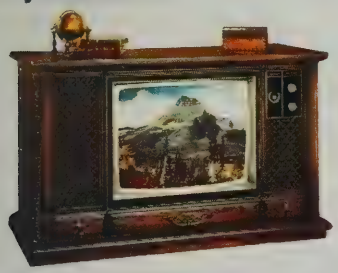
Home TV-FM Antennas—how to professionally design & install an antenna system.
EDP-186 . . . . . **5.95**

See page 48 for book ordering information.

Want faster service? Order by phone—call (616) 982-3411 day or night.

Deluxe 25" Color TV Cabinets

For the famous Heathkit GR-900—Fine furniture styling, fully assembled.



Mediterranean cabinet. Pecan-stained wood solids and veneers, simulated wood-grain base and trim. 30⅞ x 48¾ x 20⅝" HWD (23½" D. with cup).
Assembled GRA-404-25. 87 lbs.
Exp./Frt. **169.95**



Mediterranean. Pecan-stained veneers & solids, simulated wood-grain doors & base. 29¾ x 46¼ x 22⅝" HWD (25½" D. w/cup).
Assembled GRA-405-25. 100 lbs.
Exp./Frt. **219.95**



Contemporary cabinet. Walnut-stained wood solids and veneers. 30⅜ x 37⅛ x 19⅞" HWD (22¾" D. with cup.)
Assembled GRA-401-25. 62 lbs.
Exp./Frt. **119.95**



Early American cabinet. Maple-stained wood solids and veneers, simulated wood-grain trim. 32½ x 38½ x 19¾" HWD (22⅝" D. with cup).
Assembled GRA-403-25. 75 lbs.
Exp./Frt. **159.95**

GR-900 Wireless Remote Control

Orig. $89.95
NOW $39.95



Turn set on or off, choose volume levels, adjust color and tint, change channels. 20' range. Builds, installs in just 3 evenings. Shpg. wt. 8 lbs.
Kit GRA-900-6 ..**39.95**



Simulated TV Pictures

Use Anywhere B&W TV Set

This 12" (diagonal) B & W portable operates on AC, DC, or its own optional battery supply

At home, the GR-104C plugs into a wall outlet. In the car, camper or boat it works just as well from your 12-volt battery system. Outdoors, it's completely self-contained with the optional rechargeable battery pack and snap-on sun shield.

Features state-of-the-art solid-state design including a single integrated circuit that takes the place of 39 parts, yet is only the size of a transistor. The 110° shell bond picture tube features a 20mm neck that requires less deflection power. The automatic gain control circuit provides rock-steady pictures every time. Up-front speaker puts the sound where you are, and detent tuning on BOTH UHF and VHF gives you total tuning convenience.

Three video IF amplifiers offer superior gain and controlled bandwidth, deluxe 4-circuit VHF "memory" tuner tunes each VHF station with outstanding precision, regulated power supply for drift-free operation.

Has up-front controls, lighted channel indicators, built-in telescoping whip antenna for VHF, loop antenna for UHF, beige high-impact cabinet with black front panel.

Assembly of the GR-104C is a delight for novice and expert alike—most components mount on two roomy circuit boards and a single wiring harness connects the boards to chassis-mounted parts. Both VHF and UHF tuners are factory assembled and aligned.

Kit GR-104C. Shpg. wt. 35 lbs. **149.95**

Optional Battery Pack and Sun Shield.
Kit GRA-104-3. Shpg. wt. 9 lbs. **49.95**

Sun Shield only.
GRA-104-2. Shpg. wt. 1 lb. **4.50**



Great take-along entertainer—no need to miss your favorite programs

GR-104C SPECIFICATIONS

Picture Size: 74 sq. in. viewing area, picture diagonal 12". **Deflection:** Magnetic, 110 degrees, 20 mm neck. **Focus:** Electrostatic. **Antenna Input Impedance:** 300 ohm balanced. **Tuning Range:** VHF, TV Channels 2 through 13, UHF TV Channels 14 through 83. **Picture IF Carrier:** 45.75 MHz. **Sound Carrier:** 41.25 MHz. **Sound IF Carrier:** 4.5 MHz. **Video Response:** To 3.5 MHz. **Audio Power Output:** 500 milliwatts into 24 ohm load. **Controls (front panel):** UHF channel selector; UHF fine tuning, VHF channel selector; VHF fine tuning. OFF/ON volume, brightness, contrast, vertical hold, horizontal hold. **Controls (rear panel):** Height, Low voltage adjust, AGC. **Tube & Semiconductor Complement:** 27 transistors, 16 diodes, 1 IC, 1 picture tube. **Power Requirements:** 110-130 volts, AC, 40 watts; 12 volts DC @ 24 watts. **Overall Sizes:** 11½" H x 15¾" W x 9⅝" D.

Famous-for-excellence Heathkit Color TV's—

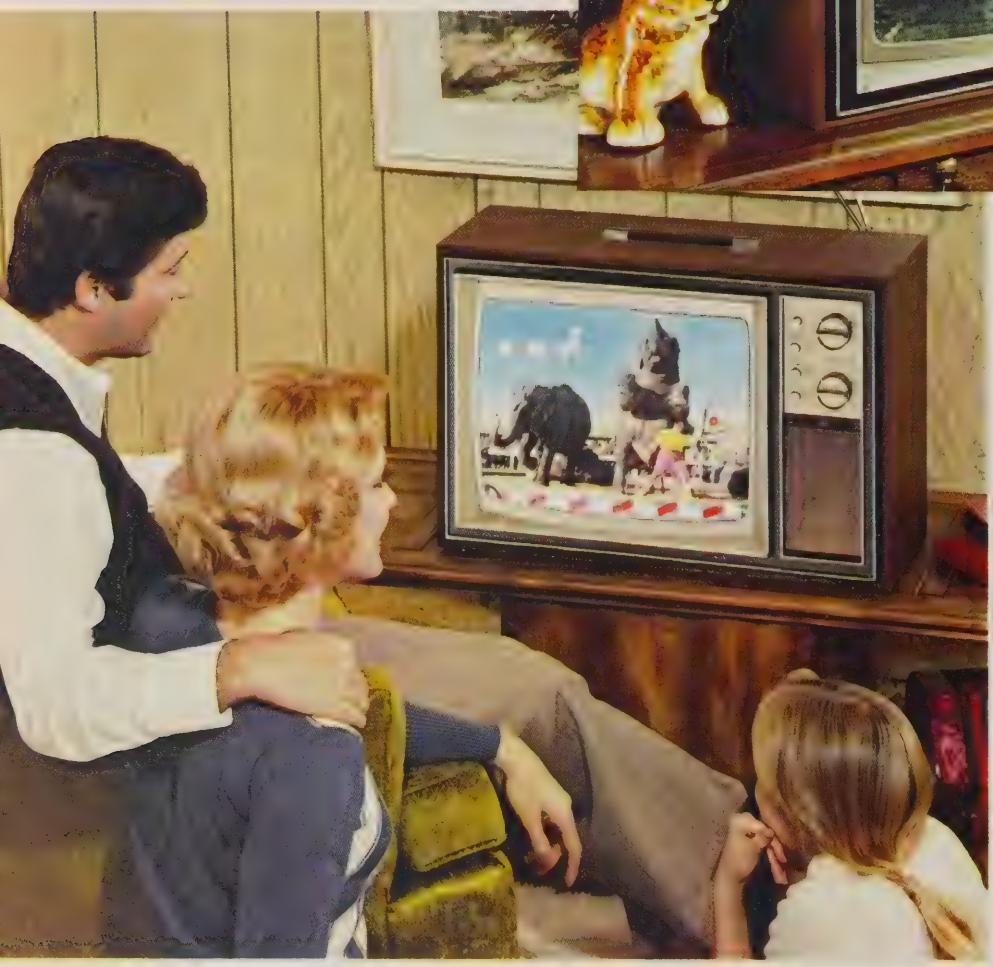
charg-a-kit HEATH REVOLVING CHARGE

- *On-Screen digital channel readout with Optional Digital Clock available*
- *All-Channel VHF-UHF detent tuning*
- *New one-button preset picture control restores perfect picture at a touch*
- *No convergence or purity adjustments ever*

Simulated TV Pictures



19" Diagonal Measure GR-500



Color TV viewing becomes an entirely new experience.

19V, 17V and 15V screen

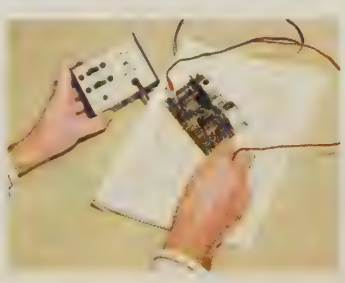
Heath color TV, quite simply, *"looks"* better than virtually any other color TV in the marketplace, and with good reason. Since you build the set yourself, each and every circuit throughout is perfectly aligned, by you, as you build. Your TV does not have to take the jolts and jars of shipping and handling common to "in the box" sets. And, thanks to Heath's precision engineering and design innovations, you have one of the most technologically advanced color sets available.

The precision in-line gun tube uses a slotted shadow mask for far greater light output. And, in the GR-400 and GR-500, a negative matrix screen is used for greater contrast and brightness. The advanced picture tube, coupled with design improvements in signal circuits, results in a color picture of simply amazing realism and detail, with particularly dramatic improvement in night scenes due to realistic and accurate light levels.

Factory adjusted and sealed static toroid yoke and magnet assemblies end purity and convergence adjustments forever. The VHF tuner features a new mixer circuit with a dual-gate FET for excellent cross modula-



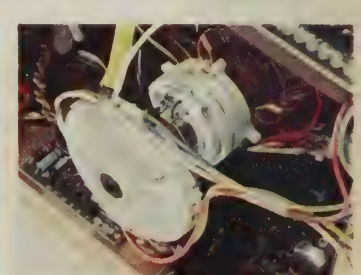
Modular circuit boards plug onto the slide out chassis for really easy servicing.



Separate test meter and troubleshooting manual let you solve most problems yourself—without expensive service calls.



New slot-mask picture tube for greater light output and picture realism.



New static toroid yoke & factory-adjusted & sealed assembly end convergence or purity adjustment — forever.

Charge a kit — no money down on any kit — see page 50 for details.

superior performance you build yourself



17" Diagonal Measure GR-400



15" Diagonal Measure GR-300

Simulated TV Pictures

sizes — all with on-screen digital readout and one-button picture control.

tion performance. The RF amplifier is also a dual-gate FET, resulting in a low-noise figure, high gain and low cross modulation. The four circuits of the tuner (most sets have just three) offer far greater selectivity than ordinary sets.

Each VHF and UHF channel is selectable simply by turning the channel selection knobs until they click to your favorite channel with positive detent tuning action. As you turn the knobs, every channel number is displayed on the screen in big bright digits — totally automatic. An automatic fine tune circuit (AFT) "locks in" on the perfect picture each time a channel is changed, so you can tune without making adjustments.

The one-button pre-set picture control is a very convenient feature, too. Once you set the brightness, contrast, color and tint (by rear preset controls), a touch of the PPC button returns the picture to perfection instantly, no matter how much the front panel controls have been disturbed.

Has front panel controls for on-off volume, tint/AFC and color; thumbwheel controls for contrast and brightness. Other features include instant-on operation with front panel defeat for vacation-time shutdown; hi-fi output jack and TV speaker defeat switch; 75 ohm VHF antenna input (ideal for cable TV installations).

The circuit and electronic components in these Heath TV's are designed for the utmost reliability, stability and long life. Metal case semiconductors are used in all power output stages for improved circuit reliability. Increased use of protection circuits assures long component life. The high voltage power supply features a voltage tripler circuit for plenty of reserve power. Quasi-complementary-symmetry vertical deflection circuit eliminates the need for an output transformer.

Has slide-out chassis, plus interconnecting cables with plugs and sockets for easy adjustment and service should the need arise. The complete and comprehensive troubleshooting manual and the test meter you use while building the kit let you solve most problems without expensive service calls.

Compare the design features, compare the quality, and you'll see that this generation of Heath color TV is the best value yet.

Kit GR-500, less cabinet, Shpg. wt. 88 lbs., Express/Frt. **499.95**

GRA-500-1, walnut veneer table model cabinet (main illustration), 17¼" H x 25½" W x 14"D (17"D including cup), Shpg. wt. 35 lbs., Express/Frt. **42.95**

GRA-500-2, floor model cabinet of selected furniture-grade wood solids & veneers with luxurious walnut stain, 28⅝" H x 29¼" W x 16⅜" D (19⅜" D including cup), Shpg. wt. 45 lbs., Express/Frt. **89.95**

Kit GR-400, with walnut veneer cabinet (16⅝" H x 24⅛" W x 12¾" D, 15¾" D including cup), Shpg. wt. 104 lbs., Express/Frt. **489.95**

Kit GR-300, with walnut veneer cabinet (15⅜" H x 22¼" W x 11½" D, 14½" D incl. cup), Shpg. wt. 90 lbs., Express/Frt. .....**Was 429.95, NOW 399.95**

GRA-403-18, roll-around cart. 22" H x 27" W x 15⅝" D, Shpg. wt. 23 lbs., Express/Frt. **21.95**

Kit GRA-2000-1, Digital Clock Accessory, Shpg. wt. 1 lb. **29.95**



Contemporary Cabinet for your GR-500

Assembled & finished, ready to house your GR-500 in contemporary elegance. Constructed of select furniture-grade solids & veneers with luxurious walnut stain finish. 28⅝" H x 29¼" W x 16⅜" D (19⅜" D including cup).

Kit GRA-500-2, Shpg. wt. 45 lbs., Express/Frt. **89.95**

GR-500, -400, -300 SPECIFICATIONS

Deflection: Magnetic, 90 degrees. **Focus:** Electrostatic. **Convergence:** Magnetic. **Antenna input impedance:** VHF: 300 Ω balanced or 75 Ω unbalanced. UHF: 300 Ω balanced. **Tuning range:** TV channels 2 through 83. **Picture IF carrier:** 45.75 MHz. **Sound IF subcarrier:** 42.17 MHz. **Sound IF frequency:** 4.5 MHz. **Video IF bandwidth:** 4.08 MHz at 6 dB down. **Hi-Fi output impedance:** 2200 Ω. **Frequency response:** ±1 dB, 50 Hz to 15 kHz. **Harmonic distortion:** less than 1% at 1 kHz. **Output voltage:** greater than 1.0V rms. **Audio output impedance:** 8 Ω. **Output power:** 1 watt. **Power requirements:** 110-130 VAC, 60 Hz, 230W.

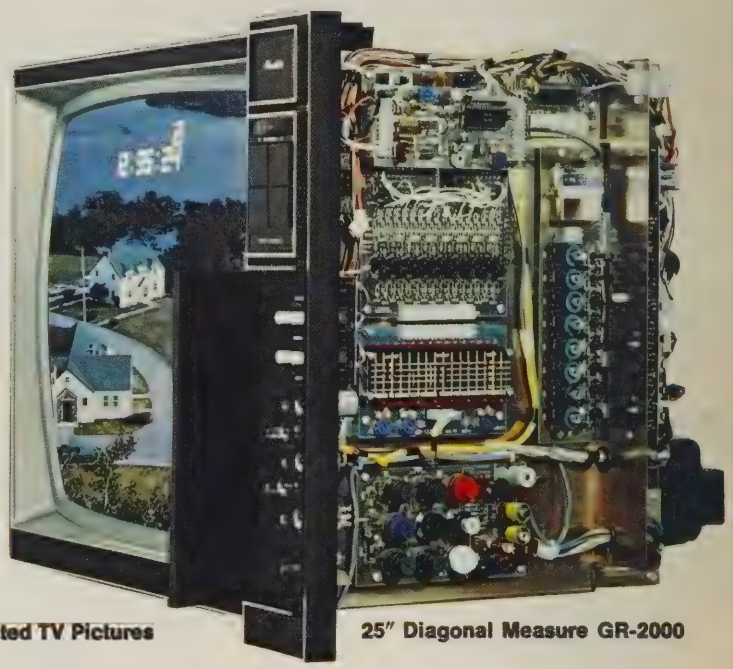
Want faster service? Order by phone — call (616) 982-3411 day or night.

Our finest digital

Heath 2000 Series—Our finest models feature advanced technology combined with easy operation and easy assembly



Simulated TV Pictures



25" Diagonal Measure GR-2000

The Heath 2000 series color TV's are the finest sets we have ever offered. Simply touch a button on the front panel or optional remote control transmitter and the programmable digital counter silently sweeps up or down through any 16 pre-selected stations. Release the button and the precision UHF/VHF varactor tuner "locks in" the channel of your choice.

You see the channel number right on the screen thanks to the Heath-designed On-Screen Electronic Digital Channel readout. The bright white numerals are easy to see from any viewing angle. The readout remains on for as long as you want, up to 1½ minutes, or permanently, if you choose. And you can position the numbers anywhere on the screen.

Add the optional Digital Electronic Clock with On-Screen Readout and the time (in four-digit, six digit, 12-hour or 24-hour format) will appear with the channel number in same size 1" digits.

The volume is precisely adjusted in a series of small steps. Simply hold the button (on the set or on the optional remote control) until you get the sound you want. This control also adjusts the volume of the Hi-Fi sound output (to your separate amplifier).

The Heath exclusive IF filter provides truly superior color reception, particularly in urban areas where multiple transmitters are located or where multi-channel cable service is available. The fixed L-C type filter uses an IC IF amplifier to create an ideally shaped bandpass that greatly reduces adjacent channel interference. It totally eliminates the highly critical traps that go out of adjustment with age—so there's no need for periodic instrument alignment. You get a consistently excellent color picture year after year.

The total touch-tune remote control (you can add it as a low cost option) lets you select UHF/VHF channels, control volume, color tint and intensity, on and off, from up to 20-feet from the set. The channel selector and volume buttons on the remote can also be used to activate the channel and clock displays on the picture screen.

The 2000 series color TV's are the easiest to build we've ever offered. 100% solid-state chassis; extensive use of IC's including IC color amplifier for truer colors, IC color oscillator and automatic phase control for more precise and reliable tints, IC automatic gain control for improved sensitivity, selectivity and noise immunity. This results in an easy to assemble kit with fewer point-to-point wiring connections, more modular circuit boards, more pre-fabricated wiring harnesses, and fewer chassis mounted parts.

The 2000 series picture tubes feature deluxe Black (Negative) Matrix with fully illuminated dots and black surround. DC controlled contrast reduces picture interference. It all adds up to greater contrast and a bright, vivid, color-true picture that's one of the finest in the world.

Service, should you need it, is as easy as ever too. Only Heath provides built-in service facilities such as digital design true dot generator, purity and convergence adjustments, vertical and horizontal centering circuits, "service" circuit boards in pull-out drawer with all components in an easy to find place. The test meter not only aids you in kit assembly, but it's an invaluable service tool too.

All in all, we think you'll find the 2000 series color TV's to be the best sets available at any price—and a thoroughly enjoyable kit building experience.

Finished cabinets for your GR-2000



Mediterranean cabinet with doors. Accepts 2 speakers. Constructed of solids & veneers; simulated wood-grain base & trim. Dark oak stain. Hardware finished in Windsor Antique Gold tone. Fully assembled, finished. 29⅝" H x 48¹⁵⁄₁₆" W x 23" D. (26¼" D including cup).

GRA-2000-5, Shpg. wt. 126 lbs., Exp./Frt. **219.95**



Mediterranean cabinet. Accepts 2 speakers. Crafted of solids & veneers; simulated wood-grain trim. Dark oak stain. Hardware features Antique Gold finish. Fully assembled and finished. 30⅝" H x 49¹⁵⁄₁₆" W x 20⅞" D. (23¹⁵⁄₁₆" D including cup).

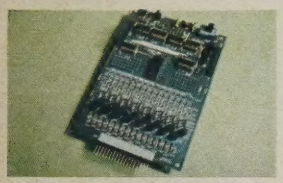
GRA-2000-4, Shpg. wt. 92 lbs. Exp./Frt. **169.95**



Present GR-2000 owners — no cost mod kit now available for vertical circuit board, see page 51.

design color TV's

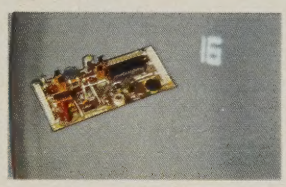
Only the Heathkit 2000 Series color TV's offer you all of these features:



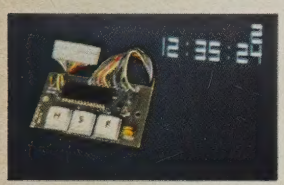
Programmable Channel Selection through digital up-down counter with computer-like programming board—a breakthrough in new tuning convenience.



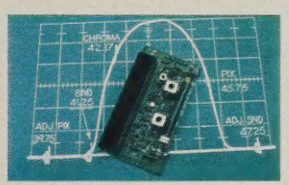
Silent All-Electronic Tuning with new combination UHF/VHF Varactor Tuner located inside the chassis where it is completely shielded.



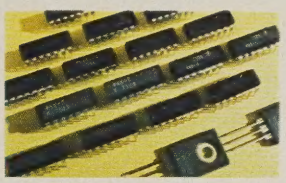
On-Screen Channel Readout in big, bright numerals, with adjustable brightness—easily viewable from across the room at any viewing angle.



On-Screen Clock Readout—gives you the correct time in four or six-digit format, and with your choice of 12 or 24 hour time.



Fixed Filter IF totally eliminates instrument IF alignment forever—gives ideally shaped bandpass to eliminate critical traps and interference—another Heath exclusive.



19 Integrated Circuits (ICs) simplify kit building and permit ultra-sophisticated technology with long term reliability.

Expedited 48-Hour No-Charge Warranty Service Plan for Solid-State TV Modules!

Special service facilities have been established at the factory and all Heathkit Electronic Centers to expedite service and return of Solid-State TV circuit modules within two working days (plus transportation time). If a component proves defective during the 90-day warranty period, the modules will be serviced with no charge for parts or labor. If the problem is due to a construction error or if the 90-day warranty has expired, modules will be serviced at a fixed charge of $5.00 per module. All picture tubes warranted for two full years.

GR-2000 SPECIFICATIONS

Picture tube: 25″ (diagonal). Viewing area: 315 sq. in. Deflection: Magnetic, 90 degrees. Focus: Electrostatic. Convergence: Magnetic. Antenna input impedance: VHF: 300 Ω balanced or 75 Ω unbalanced. UHF: 300 Ω balanced. Tuning range: TV channels 2 through 83. (Preset any 16). Picture IF carrier: 45.75 MHz. Sound IF carrier: 41.25 MHz. Color IF subcarrier: 42.17 MHz. Sound IF carrier: 41.25 MHz. Color IF subcarrier: 42.17 MHz. Sound IF frequency: 4.5 MHz. Video IF bandwidth: 4.08 MHz, at 6 dB down. Hi-Fi output: Output impedance: 2200 Ω. Frequency response: ±1 dB, 50 Hz to 15 kHz. Harmonic distortion: Less than 1% at 1 kHz. Output voltage: greater than 1.0V rms. Audio output: Output impedance: 4 Ω or 8 Ω. Output power: 2 watts. Power requirements: 110 to 130 volts AC, 60 Hz, 200 watts. Net weight: 112 lbs.

GR-2050 SPECIFICATIONS

Same as GR-2000 except Picture tube: 21″ (diagonal). Viewing area: 226 sq. in.

GR-2000 25V Digital Color TV Kit

Less cabinet, order your choice below.

Kit GR-2000. With chassis, picture tube, one speaker. Shpg. wt. 147 lbs.
Expt./Frt. **689.95**

Remote Control for GR-2000.
Kit GRA-2000-6. Shpg. wt. 4 lbs. **89.95**

Digital Clock for GR-2000.
Kit GRA-2000-1. Shpg. wt. 1 lb. **29.95**

Second speaker for GR-2000. Fits in space provided on GR-2000 cabinets (where indicated). Includes all connecting cables.
GRA-2000-7. Shpg. wt. 3 lbs. **6.50**

GR-2050 21V Digital Color TV Kit

Less cabinet. Order your choice below.

Kit GR-2050. With chassis, picture tube, 1 speaker. Shpg. wt. 122 lbs.
Exp./Frt. **599.95**

Remote Control for GR-2050.
Kit GRA-2000-6. Shpg. wt. 4 lbs. **89.95**

Digital Clock for GR-2050.
Kit GRA-2000-1. Shpg. wt. 1 lb. **29.95**

charg-a-kit

Ultrasonic Remote Control



For armchair control of on and off, volume, channel selection, color intensity and tint, activation of digital readout. Includes receiver for in-chassis mounting, hand-held transmitter. Operates to 20 ft. Shpg. wt. 4 lbs.
Kit GRA-2000-6. ..... **89.95**

Finished Cabinets for your GR-2050



Space-Saver Contemporary Cabinet. Fully assembled and finished. Wood solids and veneers with luxurious oiled walnut stain; black expanded foam speaker grille in base. 28⅝″ H x 30½″ W x 18½″ D (22¼″ D with cup). Shpg. wt. 65 lbs.
GRA-2050-1,
Exp./Frt. **119.95**



Mediterranean Cabinet. Luxurious, romantic styling. Fully assembled with wood solids and veneers high-lighted with dark oak stain and simulated wood-grain trim. Brown patterned grille cloth. 28⅞″ H x 38⅝″ W x 19¾″ D. (23¾″ D w. cup). Shpg. wt. 90 lbs.
GRA-2050-2, Exp./Frt. . . **149.95**

Compact Contemporary Cabinet. Solidly constructed of wood solids and veneers finished in luxurious oiled walnut stain. Comes fully assembled with cutout for one speaker. 34⅜″ H x 33⅞″ W x 20⅝″ D (24⅛″ D including cup). Shpg. wt. 60 lbs.
GRA-2000-8, Exp./Frt. **129.95**



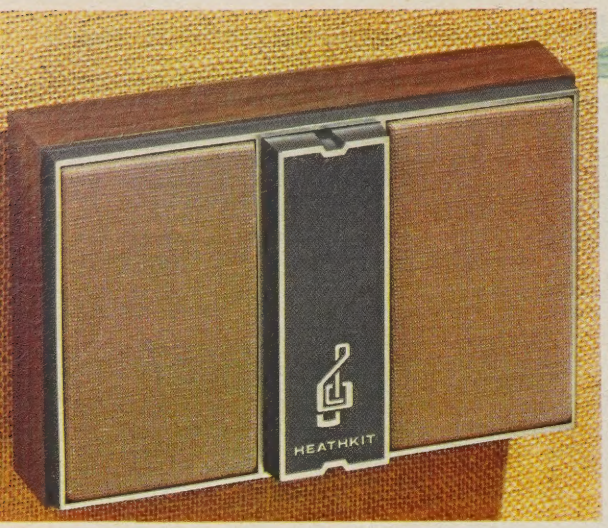
Contemporary cabinet. Dual speaker capability. Comes completely assembled and finished. Constructed of solids and veneers; oiled walnut stain. 28⅜″ H x 46¹³⁄₁₆″ W x 20¾″ D. (23⅝″ D including cup). Shpg. wt. 89 lbs.
GRA-2000-2, Exp./Frt. **159.95**



Early American cabinet. Twin speaker capability. Distressed maple stained wood solids & veneers; simulated wood-grain trim. Hardware has Windsor Antique Gold finish. Fully assembled & finished. 31⅜″ H x 47¹³⁄₁₆″ W x 20½″ D. (23⅜″ D including cup). Shpg. wt. 94 lbs.
GRA-2000-3, Exp./Frt. **169.95**

Want faster service? Order by phone — call (616) 982-3411 day or night.

Welcome friends with their favorite tune





HEATH charg-a-kit REVOLVING CHARGE

Heathkit Electronic "Doorbell" is one of our most unique kits... you program it to play your favorite tune

$44.95

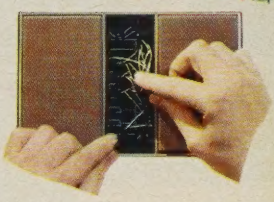
What an exciting way for visitors to announce themselves...your favorite melody plays when they touch the door button. Use as many as 16 notes to program your favorite tune. Change it whenever you wish...program to celebrate a season, an anniversary, a birthday, even a special party. And the TD-1089 tells you whether a visitor is at the front or rear door by the length of the tune.

Changing your tune is easy. Just rearrange the programming leads in the connectors of the C through C' "keyboard" located behind the front-panel access door. The assembly manual includes programming instructions for a variety of tunes, or you can compose your own. Controls for tuning, volume, speed, and decay characteristics of the electronically synthesized sound also are located inside the front-panel door.

Single circuit board construction makes it easy-to-build. And installation is easy too, just wire between existing bell transformer and TD-1089. The attractive brown plastic cabinet with dull-gold color trim and tan fabric panels is included in the kit.

The TD-1089 is loud enough to be heard throughout normal size homes, but you can add extra 16-ohm speakers to the "extension" terminals and spread the sound to other areas.

Kit TD-1089, Shpg. wt. 4 lbs. **44.95**



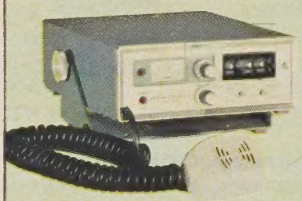
The TD-1089 is easy to program. Just remove the decorative front panel to change programming leads and make adjustments.

TD-1089 SPECIFICATIONS

Power Requirement: 16 Volts AC, 50/60 Hz, from standard doorbell transformer (not supplied) with 10 VA Rating. **Tone Characteristics:** Decaying, mellow. **Maximum Power Into Speaker:** 1 watt. **Speaker Size:** 3" x 5" oval - 16 Ohm. **Actuating Inputs:** Two, for front and rear doors. **Programming Matrix:** 13 notes x 16 beats — same note up to 9 beats. **Dimensions:** 5¾" H x 8⅝" W x 2⅝" D. **Net Weight:** Approx. 1½ lbs. **Power Drain:** Idle, 6 watts, Maximum Output, 12 watts.

More exciting new Heathkit products

Heathkit 2-Meter Transceivers





New

HW-2026 Transceiver gets you on 2 with synthesis for up to 50% less. See it on page 71.

Only $289.95

HW-2021 Handheld Transceiver — 1-Watt out, 5 receive & 10 transmit channels. See it on page 69.

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Heathkit low-cost 'scope



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IO-4550 DC-10 MHz dual-trace 'scope...top value! See it on page 65.

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Learn about electronics at your own pace. See pages 86-88.

Low As $89.95

Heathkit MODULUS hi-fi system



New

AN-2016 Digital AM/FM Stereo/Quadraphonic Control Center. See it on pages 27-29.

Only $599.95

See index on page 3.

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